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Telephony®

THE JOURNAL OF THE TELEPHONE INDUSTRY

SINCE 1904

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LOOKS COMPLICATED

Electronic computer handles all of General Telephone Co. of Ohio's accounting department computations. Looking on in awe is Barbara Christ, keypunch operator. Jack Bosh, IBM customs engineer, explains. See p. 52.

MANAGEMENT • PLANT • TRAFFIC • COMMERCIAL • LEGAL • ACCOUNTING

Revenue immediately increased 51 per cent at this booth in Platea, Pa., when General Telephone replaced the old style unit with an Alcoa outdoor installation, proving that customers definitely prefer aluminum's brighter, cleaner appearance.

"REVENUE OFTEN INCREASES 50% OR MORE WHEN WE SWITCH TO ALCOA BOOTHS,"

Reports T. J. Schultz, General Commercial Manager, General Telephone Company of Pennsylvania

"Since 1955 we have purchased 177 Alcoa outdoor booths and every one of them has more than paid its way in increased revenue, lower maintenance expense and reduced vandalism damage," says Mr. Schultz.

"An example of the way booths of Alcoa Aluminum boost revenue is this installation in Platea, Pa. Ever since we switched from an old style booth to an aluminum unit and moved the installation a few feet closer to the highway, revenue has shown an average increase of 51 per cent a month.

"Upkeep costs have also gone down since we started installing aluminum booths. Because they are corrosion resistant, occasional washing and sweeping is all that is needed to keep them clean and attractive. And vandalism, too, has been greatly reduced . . . thanks to the excellent lighting and sturdy construction of Alcoa booths."

Like many other companies, General Telephone of Pennsylvania has found Alcoa outdoor booths a sound investment and a sure road to an immediate increase in revenue. Why not find out how Alcoa booths can do the same for you? Write for free brochure and ask your jobber to show you the Alcoa Goodwill Kit—the free promotional package to help you merchandise the new booth to your customers. Aluminum Company of America, 1720-M Alcoa Building, Pittsburgh 19, Pa.

Maintenance costs went down for General Telephone of Pennsylvania when it began using outdoor booths of Alcoa® Aluminum. Occasional sweeping and washing with soap and water is all that is needed to keep them smart and new looking.

"People like the lighting in Alcoa booths," says Mr. Schultz. "Excellent lighting and sturdy construction give a feeling of safety at night!"

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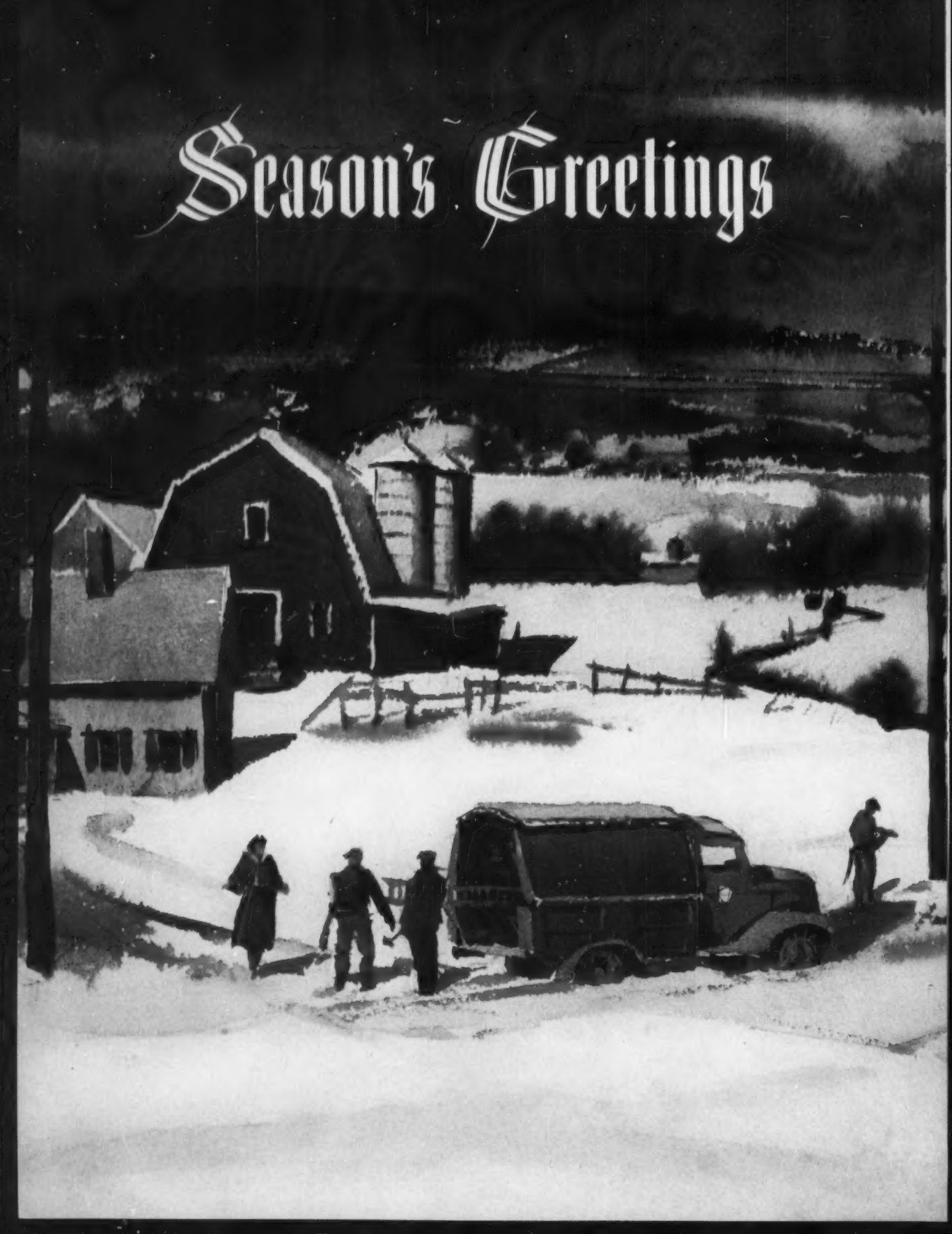
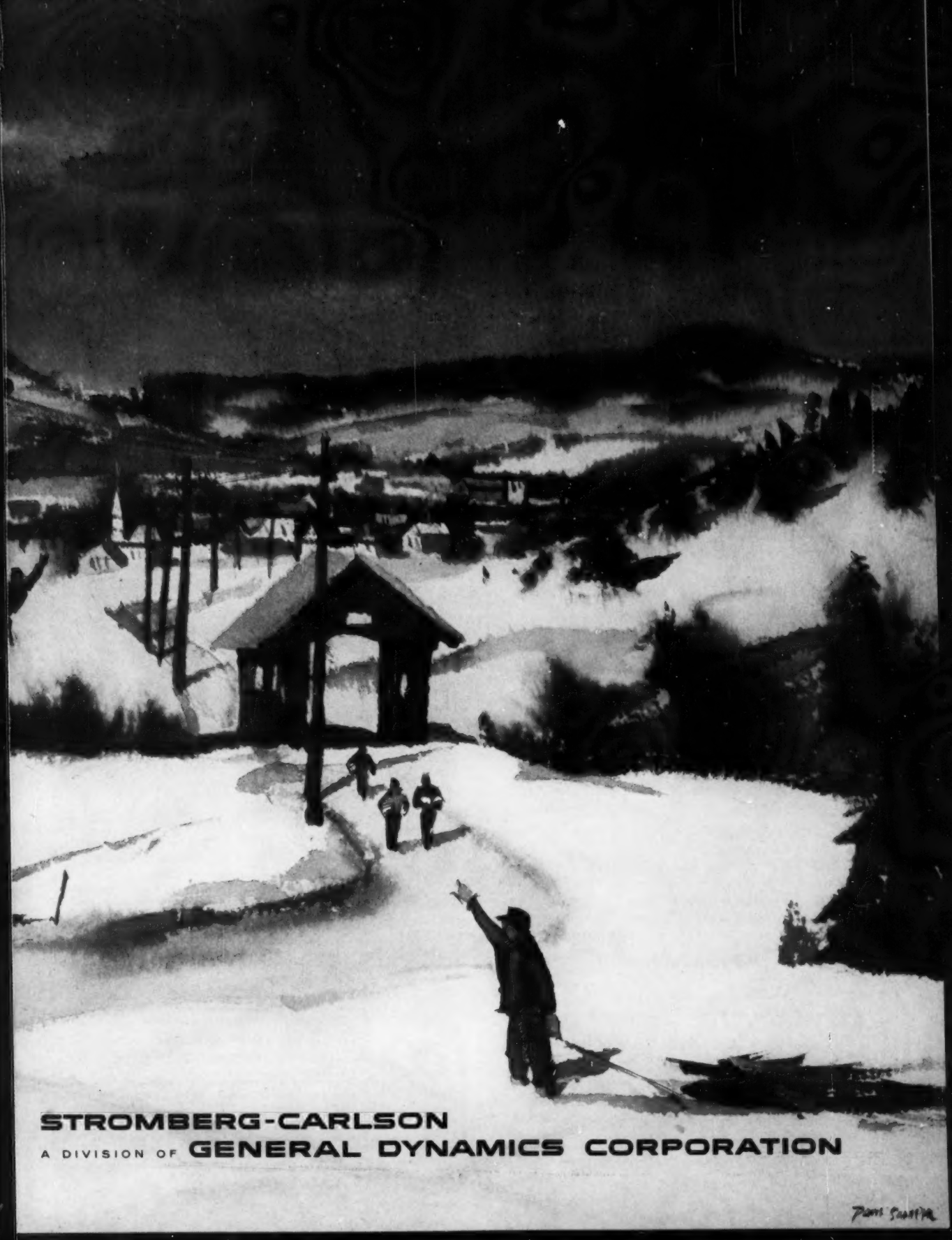

Season's Greetings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FLASHES AND PLUGS

HISTORIC RESCUE VIA TELEPHONE. How the telephone helped to preserve an automotive invention is an interesting story.

One night when the late inventor Charles F. Kettering was in a hotel room, unable to sleep, he arose, and worked out in his mind the answer to a complicated transmission problem. This he sketched with soap on a mirror.

But soap, boon to humanity that it is, is perishable, and almost certain to attract the attention of hotel maids. Therefore, Kettering called Detroit by long-distance telephone to secure a photographer and capture the sketch as a permanent record. Doubtless, the unknown story of how the soap-sketched mirror was guarded till arrival of the photographer would make good reading, too.

•

SHADE OF IL DUCE! Travelers in a Verona, Italy railroad station were startled recently when they heard the voice of Mussolini coming from the loudspeakers on the station platforms, reports the newspaper, *Il Popolo*, of Milan.

Apparently alarmed by their recollections of the fiery Il Duce, they alerted the police, who discovered that the voice was that of Signor Anoardo, a train announcer.

Between arrivals and departures, Anoardo amuses himself and his friends with imitations—of Mussolini—and he had forgotten to turn off the mike!

•

NO FINAGLING (N.F.) PLEASE. A Houston telephone subscriber told the operator she wanted to talk to S. W. Brown in another city. The operator got the other town on the line and asked for the number of S. W. Brown.

The distant operator scanned her directory and replied "NF Brown." (no telephone that is.)

"I want S. W. Brown, not N. F. Brown," chimed in the customer.

Patiently, the operator explained that S. W. didn't have a telephone so the woman asked to talk to Bertie Brown.

Again the distant operator replied "NF Brown."

"Lordy me," sighed the exasperated Houston woman. "I don't know why you keep trying to push N. F. Brown off on me."

•

STRICTLY A STAG. Recently, the *Deseret News*, Salt Lake City, Utah, reported that a local woman telephoned to see if her husband had drawn a permit for the elk hunt.

The information clerk searched the office records to determine in what district the inquirer's husband had applied, then matter-of-factly asked her if it was an "either sex" hunt.

"Oh, no," answered the little lady. "Only the men-folk are going."

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Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY
Since 1901

December 12, 1959

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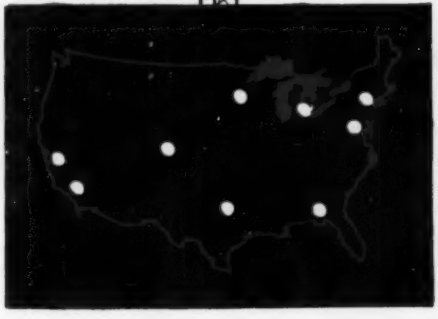

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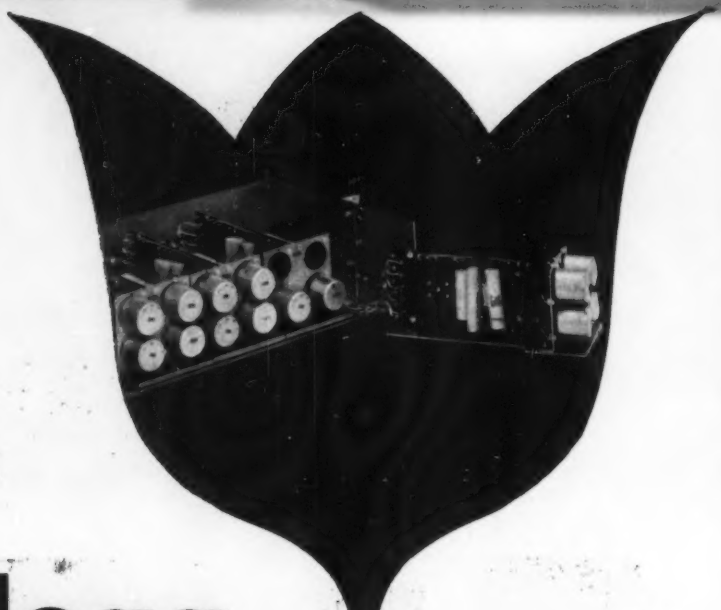

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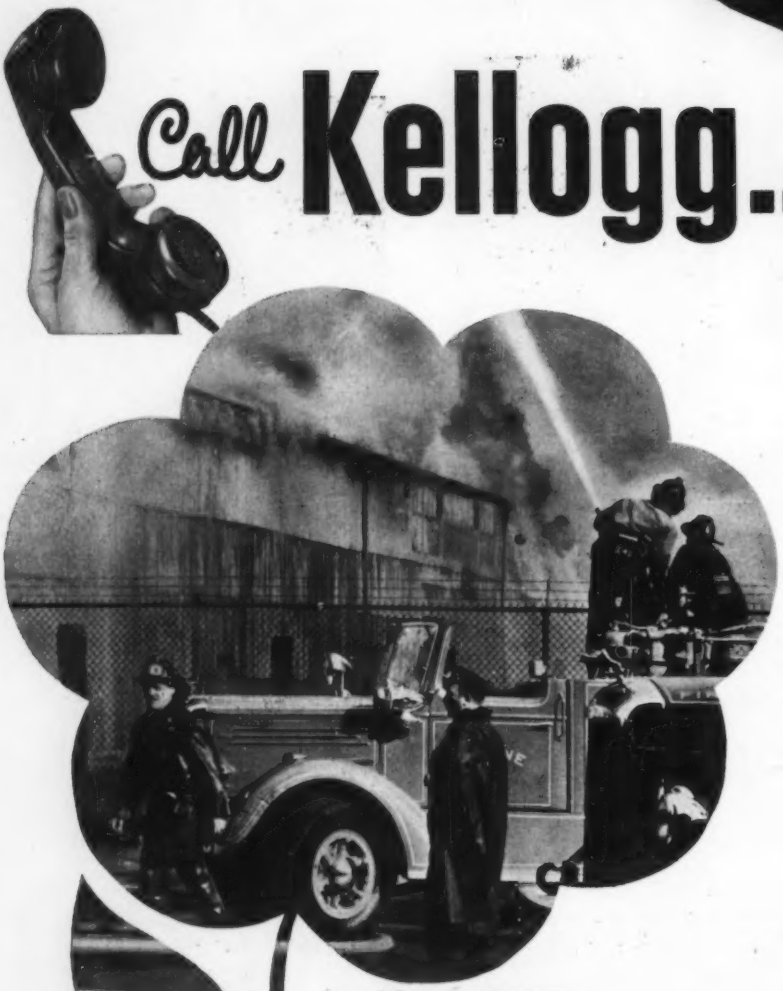

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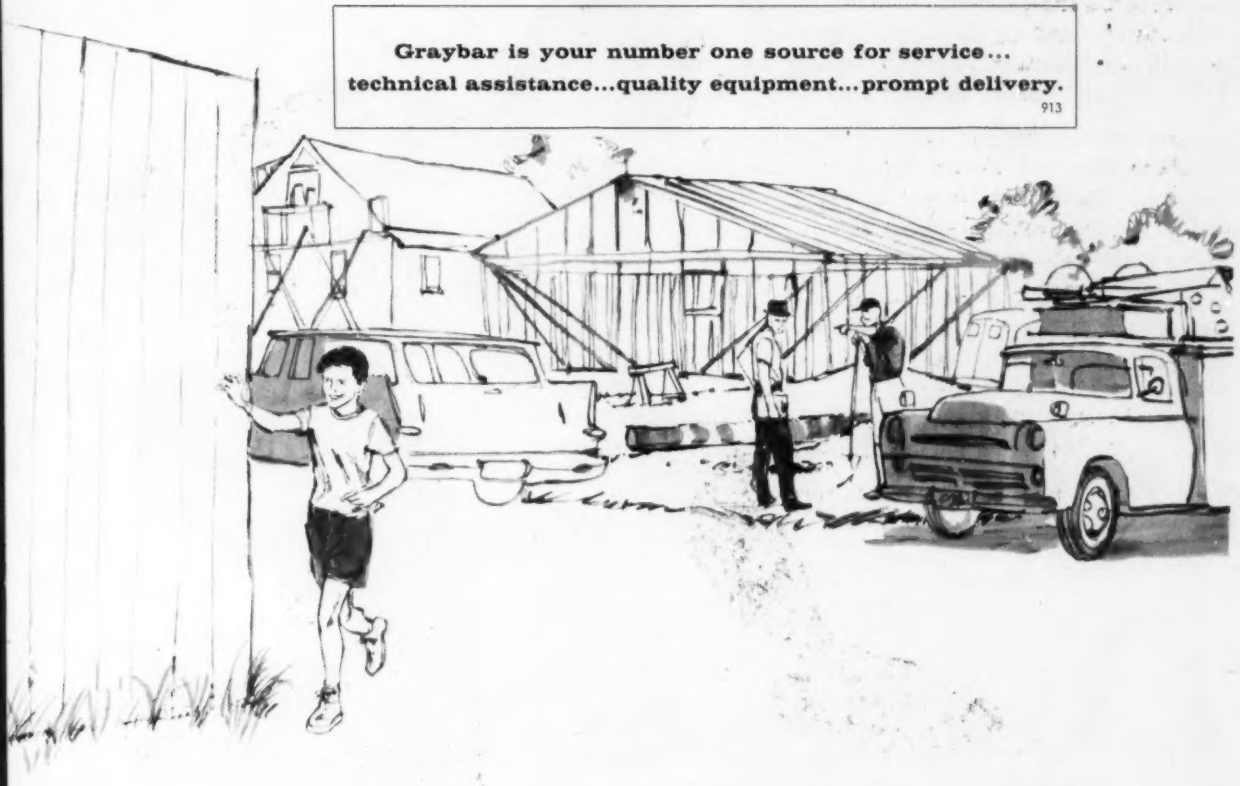

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Utility Public Relations Practices

No calling or profession has a greater degree of responsibility for the effective performance of the enterprise system than those in charge of maintaining good relationship with the public.

By FRANCIS X. WELCH, Washington Editor of TELEPHONY*

MY ONLY qualification in the field of public relations is that of an impartial observer. As an editor, I have long followed the public relations activities of our utility companies very closely and carefully. Earlier this year I conducted a questionnaire survey of comparative organizational practices of gas, electric, and telephone companies to which 124 executives and officials responded. On the basis of the results—as some of you may recall—an article was published in *Public Utilities Fortnightly*, which showed some interesting conclusions. Of course, I must repeat, this does not make me an expert. But confining our discussion to reporting and analyzing, such as anyone might observe for himself, let us look at this public relations proposition from scratch.

Just what is it? Essentially it is the systematic cultivation of public opinion in order to reap a harvest of good-will. Now it is elementary that in order to get any harvest at all, you need three things: (1) Good seed; (2) good soil; and (3) good cultivation. The seed, in this analogy, might be compared with a company's case, its justification for deserving public friendship. And just as the Bible tells us that a bad tree cannot bring forth good fruit, neither can an unworthy or defective utility service be expected to produce lasting results. The soil, of course, is the service area in which the favorable public opinion is to be created. And the public relations program might be compared with the mechanical cultivation of that soil. That is what I would like to discuss mainly—the mechanics or organization of this cultivating process, as compared with the seed and the fruit it is supposed to produce.

As a specialized vocation, the practice of public relations is a baby compared with other professions and callings. It has neither recognized standards of eligibility nor generally accepted guideposts. It is far too inexact to be a science; too supplemental in its relations to other disciplines to be called an art. Yet it is safe to say that no calling, no profession, has a greater degree of responsibility for the effective performance of the enterprise system than those in charge of maintaining its good public relations, regardless of what the title is or how the job is organized. That is true on a dollars-and-cents basis. It is true from the standpoint of the over-all security of our enterprise system as compared with rival economic systems. And all this is particularly true of public utility enterprise. That this truth is becoming more and more self-evident is seen in the almost universal recognition given in recent years by responsible company officials to the increasing importance of the public relations job.

Most of the "pros" in the public relations business date its origin as a specialized aspect of corporate management from the days of the late Ivy Lee and Edward L. Bernays and other pioneers in what used to be called the "engineering of popular consent" or "organized persuasion." Basically, of course, the act of making friends and influencing people goes back to time immemorial. King Solomon, Cleopatra, and Queen Elizabeth were all good practitioners. Ivy Lee and the other early American experts were probably among the first to use the phrase "public relations" in the approximate sense in which we use it today. And it must be confessed that some spectacular results were accomplished, such as transforming old John D. Rockefeller from a personal devil of the original Standard Oil monopoly into a benign old gentleman, now remembered chiefly for his philanthropy and illustrious offspring.

And when we stop to consider some of the bad public reaction which followed in the wake of attempts of gas producers to obtain congressional legislation amending the Natural Gas Act during the past few years, there is, I am sure, many a gas industry man who might wish we had some of that kind of public relations magic today.

But there really is no such thing as magic in the public relations field. Its most successful exponents are those who believe in hard work, old-fashioned research, and application of well-known principles with respect to the behavior of public opinion under various circumstances. Public utility industry cannot expect miracles in this field and it would be folly to put any faith in those who promise miracles. More than anything else the situation calls for the practical down-to-earth approach.

The first important decision is determining the kind of public relations

*Mr. Welch is editor of *Public Utilities Fortnightly* of Washington, D. C.

appeal needed. It may surprise some of you to know that there *is* more than one kind. There are at least three kinds. And even more if we subclassify.

First and simplest is the appeal for public favor of a single product or commodity, such as a particular brand of soap, or cereal, or cigarette. If you are selling any of these you can put all your chips on the product and stand or fall on its popularity or reputation. When you are in this type of business, you do not need to worry much about the conduct of employes, or the appearance or location of your plant or buildings. The general public never sees them.

In the second group there are the local service industries, such as retail stores, where public goodwill depends not only on the excellence of the merchandise sold, but also upon the competence and cordiality of the sales people, and the delivery service, and the adequacy of the stores, as to location and comfort of the customers. You can readily see that maintaining good public relations in this second class becomes more complex.

Finally, and I am oversimplifying when I break this down into only three classifications, we have in the typical public utility enterprise a *unique* public relations problem. That is because we have service area monopoly business, regulated by government. And this imposes the most complicated kind of public relations responsibilities of all, because it involves not only the end product, the service, the employes, but also those political overtones which inevitably intrude in the case of a regulated monopoly business. It is not always enough to supply good service, through cooperative and cordial employes, with adequate facilities. The reputation of the industry as a whole, and its relationship with government authority at federal, state, and local levels, may affect the public esteem for such a utility business and often does.

Important to Utilities

If you compare the public relations requirement of a utility business with that of a competitive business, you will see at once the great importance of good public relations for the utilities, because the dissatisfied customer has no other alternative. He is almost compelled by law to do business with the utility company, whether he likes the company and its employes or not. If he wishes to continue his use of an essential utility service, he has to remain a customer. A shortsighted view of this situation might be that public relations are not so important to a public utility company, because it has a virtually captive patronage.

Actually, however, the public utility company has more need for good public relations than either of the two classes of business mentioned above. And it is precisely because its customers have nowhere else to go, if they are dissatisfied and offended, that a utility's public relations are of such great importance. We need not dwell on the mental state of the imaginary unhappy customer, frustrated because of his dependence on a service from a company he dislikes, and reminded of it in a painful way with every monthly bill. Suffice it to say that, if there were enough such unfriendly customers, they would soon seek some organized method by which to demonstrate their hostility. This could be done in a number of ways, such as through punitive legislation, complaints to the regulatory commission, public ownership proposals, etc.

No Tangible Product

So, we see that a public utility is especially vulnerable to *bad* public relations. And hence the constant efforts which every public utility makes, not only to prevent its customers from becoming dissatisfied, but also, through positive approaches, to build up and maintain the goodwill and respect of its customers, and of the community it serves. Obviously, one of the greatest factors in the accomplishment of these objectives is the group of utility employes having so many points of contact with the public—such as servicemen, commercial office employes, telephone operators, sales persons, and many others. No utility company's public relations program could succeed without the active assistance of these employes.

Another reason why a public utility company is especially dependent on its employes to gain the friendly understanding and respect of the public is because it has no tangible product, such as soap or cigarettes, to sell over the radio, or television, or otherwise. One therm of natural gas is pretty much like any other therm of natural gas, from Maine to California. In other words, it is service on which the utility company must primarily depend to build good public relations.

Now, before getting into the matter of organization of public relations, one other thing which utility company executives must keep in mind is that such a program must have a solid and truthful foundation. The service must really be all that it is represented to be. You must have good seed. Unless this is so, no matter how well planned the public relations efforts may be, they will eventually fail. Publicity and aggressive promotion may sell an inferior product once or twice—but it will soon be discredited. Public utilities do not often have this problem, because of their high standards of service performance. But utility employes are not always informed or fully understand that their company does give the public good, reliable service at reasonable rates. This, of course, is a training problem.

Looking in the other direction, it is possible for a utility company to be giving good service at reasonable rates, and *still* suffer from a lack of general appreciation on the part of the public. That situation is one that a public relations program is supposed to correct. By appealing to its own self-interest, the public can be made to understand that a utility company is doing a good job. A utility cannot afford to hide its light under a bushel and let the service speak for itself. The trick here is to avoid the appearance of selfish special pleading by the company.

What Are Public Relations?

Of course, the question always arises —"How do we know how much or how little our employes and our customers understand?" For this we must rely on tools—such as opinion sampling and surveys. And even here, we have to be careful that our tools are in good working order. Look how badly the political opinion polls missed the mark in predicting the recent British elections. I personally believe in the usefulness of opinion surveys, if they are fairly conducted and constantly checked. But it is possible that even the opinion surveys may be losing their edge. People may be getting tired of answering questions asked by perfect strangers. I have a little more to say about tools later on.

There are a number of definitions of "public relations," but I have never seen one to improve on the simple explanation which the two words themselves convey. Public relations simply

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DIVISIONS: NATIONAL-STANDARD, Niles, Mich.; tire wire, stainless, music spring and plated wires • WORCESTER WIRE WORKS Worcester, Mass.; high and low carbon specialty wires • WAGNER LITHO MACHINERY, Secaucus, N. J.; metal decorating equipment • ATHENIA STEEL, Clifton, N. J.; flat, high-carbon spring steels • REYNOLDS WIRE, Dixon, Ill.; industrial wire cloth • CROSS PERFORATED METALS, Carbondale, Pa.; decorative, commercial, and industrial perforated metals.

means having relations with the public. Such relations may be good, or they may be bad, or they may be indifferent. But whatever they are, they are bound to exist, in one form or another. There is no way in modern business, especially in the public utility business, to avoid having public relations. The important thing, of course, is to take such steps as will result in good relations.

This is a broad concept. It also includes a variety of publics. There is the investing public. There is the employe public. And even members of the general public who are not among the company's own customers. And there are the various classes of customers—the industrial, the commercial, and the residential—all of whose interests in the company's operations may occasionally conflict with each other. These different publics are like the different facets of the same gem. The reflection of the company's image may vary according to the class of public involved. But back of the image is the same subject, merely viewed from different angles. The investor looks upon the company as a money-maker. The public looks to it for service. The employe looks to it for a living and for security. Even the general public, aside from those who are customers, considers a utility company in various terms, such as a taxpayer or as a good citizen providing jobs and attracting business which can contribute to the general welfare of the state or the community.

How to appeal to these various facets of public interest lies at the core of the public relations responsibility of a company's management. Now, if what I have been saying so far seems elementary to you, let me hasten to add that it is in the elementary conception of what public relations are supposed to accomplish that most difficulties arise. When there is trouble in this area, it is not usually due to incompetency or faulty techniques or lack of ability of those in charge. The trouble is more often traceable to a flaw in this basic understanding of what the task involves; namely, having good relations with the various publics I have mentioned.

Organizing for PR

Furthermore, a good public relations program is not simply a technique. It is not a label. It is not a gimmick. True, a well-rounded public relations program may make use of any or all these devices. But they are only part and not to be confused with the whole. Over-all public relations are bigger and broader than any of the incidental parts which go to make up the whole.

One of the most interesting things discovered in the questionnaire survey already mentioned was the wide variety of organizational practices followed by the different utility companies whose officials were queried. There was very little uniformity and not much of any definite pattern. The situation recalled that old Irish bull about certain people being "all alike in only one thing, and that was in being different from one another."

State chairman for the 1960 Michigan Week, T. Austin Saunders, right, president of General Telephone Co. of Michigan, has invited Gov. G. Mennen Williams, second from right, to serve as honorary chairman of the week-long celebration, to be held from May 15 through May 21. Invited to serve as honorary co-chairman were Lt. Gov. John B. Swainson, left, and House Speaker Don R. Pears.

Broadly speaking, this survey revealed that while there was a lack of interest or realization of the importance of a public relations program, as such, there was, and still is, a good deal of uncertainty as to how the job should be handled. Maybe this is a good thing. Certainly, we cannot expect any hard and fast rules or fixed formula of organization in this area.

Separate Function?

Let us, by way of background, consider these general facts. In answer to the question, "Does your company have a specific, continually organized public relations program?" — 82 answered "yes," only 23 answered "no." To the next question, "When was your company's program started?" there was a very wide range of chronology. One company's program went back as far as 1903, while the next did not come along until 1927. Thirteen were started in the thirties, 30 were established in the forties, and 32 during the fifties, to date. So you see the utility industry would seem to be approaching a saturation point as far as establishing some kind of specific public relations program.

The next question asked brought up a rather puzzling issue: "That is, whether the public relations program should be organized as a separate responsibility or whether it should be associated with other functions of management. Only about one-fourth of the company officials answering this question said that their programs had been organized on a separate basis. The other three-fourths—86 companies to be exact—include public relations with other duties. But note the answers to the question as to whether a special official or public relations officer had been placed in charge—104 companies answered "yes," while only 10 answered "no."

I shall not take your time to review any further the results of this survey, which was analyzed in an article in the *Fortnightly*, published last May 21. The only point I am trying to make here is that out of these various responses on the different questions asked, and using my own independent judgment, I arrived at five general conclusions on internal organization of a company's public relations program with which you may or may not agree. I shall simply list them for you now and make further comments later on:

First: There should be in every utility company a specific, continuing, well-organized public relations program.

Second: It should be under the responsibility of a special officer or official, but not necessarily a full-time job for him.

Third: The public relations officer should report directly to the president and participate in the policy-making decisions of management. That needs a little more explanation.

Fourth: Public relations is everybody's job, notwithstanding the centralizing of the responsibility under the special charge of a single official or officer. More about that later, too.

Fifth: Any public relations program is only a tool—not an end in itself. And like any other tool it needs to be kept sharp, constantly under review, and checked against the availability of improvements in methods or alternative means to the real end—which is to establish and maintain a cordial relationship with the public on the broadest possible basis.

Every Company Needs a Program

Now let us go back and particularize a bit on these five points. As to the first point, I think it is generally agreed that every company needs some kind of a public relations program, for the very reason mentioned earlier, that no company can avoid public relations. But if they are not purposely cultivated so as to turn out good, they could very easily turn out bad. And even when they are cultivated, they can turn out bad.

For an illustration of what I mean here, let us consider the current TV quiz scandals recently exposed by Congress. Here was an example of a sponsor—in one case a cosmetic manufacturer and in another case a department store—putting a large amount of money on a spectacular program based almost exclusively on mass publicity. In other words, these sponsors were putting all or most of their chips on a gimmick. Did it work? Well, it *did* work, for awhile at least, for the cosmetic people. It boosted the sale of their lipsticks and other products to an astronomical level. But what happens now that the phony part of the deal has been exposed? Will it backfire? Can the high sales level be maintained, now that the program has been booted off the air? Or will the bad publicity have a negative effect?

Frankly, I do not pretend to know. But I do know this much. Even if it worked for a cosmetic maker, that sort of a program is certainly not for a utility company, which has millions of dollars of investment staked to the ground. A public utility's program obviously must be geared primarily to the service area. And it must be constant, long-range, and almost universal in its appeal. Above all, it must be genuine.

Sponsors Confused

Perhaps you will say of this illustration that I am confusing a public relations program with a publicity stunt. My reply is that I am not confusing the two things—it was these sponsors who were confused, if anything. Take the statement attributed to the so-called public relations adviser of that department store that paid thousands of dollars just to have the *name* of the store mentioned over the air, or plugged by syndicated columnists. This man said, by way of justification, in an interview and I hope I quote him correctly, "Public relations advisers everywhere have for years recommended the investment of money for such publicity purposes." The inference was that if the results paid off in terms of increased sales, the expenditure was justified. Now I ask you, who is confused?

Let me tell you that there is too much of that kind of confused thinking about public relations programs going on today. Just a couple of weeks ago, the AFL-CIO labor leaders gathered in Washington to consider, among other things, why the unions lost so much popularity with Congress and with the people that they could not stop the enactment of the Griffin-Landrum labor reform bill at the last session. One of the steps recommended by Walter Reuther was to "step up a public relations program" to popularize the union movement with the American public.

Get the picture? Just like that, Mr. Reuther whistles as if he were calling a taxicab, and he has a public relations program to solve the union's problem of political unpopularity. Sounds so easy. You find you are unpopular. So you just call in some hired help and spend some money on a public relations program and presto—everybody is supposed to love you. No need to reexamine your policy to find out *why* you are unpopular, or if by any chance you could possibly be wrong. This is what I call the "perfume spraying" concept of public relations. And let me tell you that it does not work; and it will not work for Mr. Reuther, or anybody else who confuses a deodorizing job with finding out why something smells bad. There is a time for perfume and there is a time for soap and water and a good old-fashioned scrubbing.

Responsibility Placed

Now maybe you think that public utilities are too smart to make such an obvious mistake. Well, I hope that is true. But is it true? I can remember back in the twenties and thirties when the Federal Trade Commission investigation of utilities was in full cry when many clumsy mistakes were exposed—money spent to influence newspapers and politicians and even educators. Remember those phony telegrams. Now, those utility companies were not neglecting their public relations; and they certainly spent enough money. But the methods used were wrong, at least they were wrong for utilities. And after that headline debacle, which rivaled anything in the way of the recent TV scandals, it took a long time, and plenty of hard work, including sound, patient, and sensible public utility efforts. It took two decades, including two war emergencies, for the utilities to win back public confidence and esteem. Let us hope that by this time this lesson has been learned.

Now, my second point, about a special official, can be covered briefly. Unless the specific responsibility is placed somewhere, it is very likely to be swept under the rug. It is all very well to say that public relations is everybody's job. But, human nature being what it is, what is everybody's business can quickly become nobody's business unless there is someone definitely assigned to do the necessary checking and reviewing and reporting, so as to be sure that the public relations assignment is being carried out, at all levels, and in all departments according to plan.

This thought leads directly to my third point; namely, that the public relations official must have some real authority. It does not make so much difference what his title may be—vice president or whatever—this official ought to have some say in the managerial decisions for which he will be called upon to bear the public relations responsibility. *The ideal public relations officer should be regarded by management as the conscience, not the apologist, of the company.* He should not be called in at the last minute, after basic decisions have been made by others, and asked to do a "sugar-coating job."

That is the mistake which I think the labor union people and the other people I have mentioned are making when they obviously look upon their public relations personnel as a subordinate kind of hired help to carry out orders from on high without question. A public relations official participating at the management decision table with the company's general manager, general counsel, rate engineer, and so forth, is in a position to stop public relations mistakes before they get started and before it is too late to stop them.

Frank Answers a Must

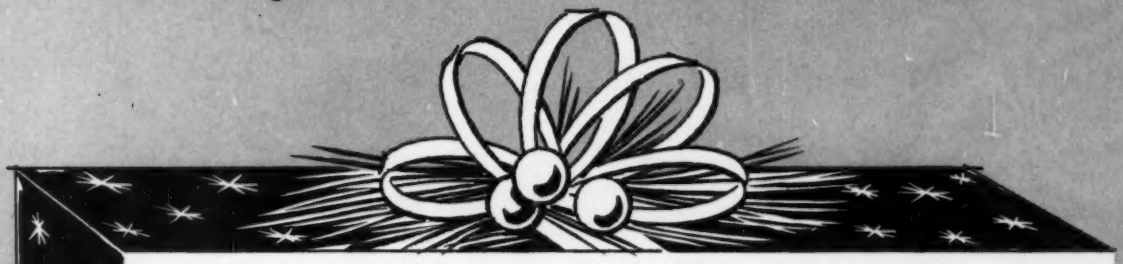
From my own background as a lawyer, I can tell you that sometimes the legal mind (and this may be true of other professions) works in exactly reverse of the public relations approach. This is not the lawyer's fault. He was trained to think that way, to be cautious and conservative, because it is his job to protect other people's property and interest. So when trouble arises, the lawyer is almost sure to advise his client to shut up and say nothing to

(Continued on page 55)

CHRISTMAS SPECIAL– LIVE AND IN COLOR, FRIDAY, DECEMBER 18, NBC-TV

BELL TELEPHONE HOUR

The Gift of Music



your host THOMAS MITCHELL

starring ROSEMARY CLOONEY • THE LENNON SISTERS

LISA DELLA CASA and GIORGIO TOZZI

PENNY AMBROSE • LITTLE SINGERS OF PARIS

and

AGNES DE MILLE DANCE THEATRE in *"The Cherry Tree Carol"*

DONALD VOORHEES and the Bell Telephone Orchestra

The next Bell Telephone Hour will bring you and your family a delightful program of popular and traditional Christmas music, performed by an outstanding group of artists.

Rosemary Clooney will sing a selection of popular holiday songs, and the four Lennon Sisters will offer a modern Christmas arrangement. The 13-year-old violinist, Penny Ambrose, will make her television debut playing Schubert's "Ave Maria."

The Little Singers of Paris will present a group of traditional French noels, while Lisa Della Casa and Giorgio Tozzi will sing carols from other lands. The Agnes De Mille Dance Theatre will perform "The Cherry Tree Carol"—the story of an ancient English carol that was transplanted to the American Appalachian mountain region.

There will also be a special message from the men and women of the Bell Telephone System entitled "The Eve of Christmas."

Check your local TV listings for time and channel in your community. Friday, December 18, NBC-TV, 8:30-9:30 E.S.T.

PRESENTED BY THE BELL TELEPHONE SYSTEM

LOCATING TROUBLE IN

Short Sections of Buried and Underground Cables

By LOUIS GOLLUB*

WHEN trouble develops in an underground cable section, particularly wet trouble, it is frequently expedient to dig and uncover the cable and clear the fault before the cable section is replaced, in order to prevent possible total cable failure and loss of service. The cable section required for replacement may not be immediately available, or the situation may not permit the time necessary to make the transfer or "section throw." Also, clearing the trouble and installing a duct splice may make section replacement unnecessary.

This article describes a method for accurately locating cable conductor faults in a short section of cable, generally referred to as "section trouble location." It is a practical method involving no mathematical computations and, with proper care, is extremely accurate.

This method is also applicable to buried cable where the cable fault has been confined to a cable section between two splices and it is desired to obtain a precise location of the fault in order to hold the amount of digging down to a minimum.

The method involves the placing of a good wire on the ground in parallel with the faulty cable and of exactly the same length. Another wire is laid between the two test points into which is connected a Wheatstone bridge galvanometer.

The three wires, namely, the defective cable conductor and the two wires laid on the ground, are then connected together at each of the two test points, as in *Fig. 1*. A flexible lead is connected to grounded battery at one end and to a test pick at the other end.

When the insulation of the good wire is punctured by the test pick and the wire contacted, a deflection is obtained on the galvanometer. This will occur when contact is made at any point along the good wire except one, where the deflection will be zero. That point is precisely above the cable fault.

Cable Tests Preceding Section Location Tests. It may be helpful at this point to review the cable fault location tests that would normally precede the section trouble location test described above.

Generally, section trouble location tests are associated with a general condition of cable low insulation or "wet trouble" and not with solid trouble on individual pairs.

Low insulation cable faults are usually difficult to locate because of high fault resistance and the normal procedure is, therefore, to break down the leaky fault into solid trouble by the application of the "breakdown test set." This facilitates the making of a fault location test by means of the Wheatstone bridge and the application of tracing tone to the fault.

It is further assumed that the cable fault has been positively proved to be in the cable section in question by opening two or three of the leaky pairs in the two manholes and proving the cable fault to that section. Then, and only then, may we proceed with the section location tests.

Test Equipment. The following test equipment is required:

(1) An insulated wire laid on the ground between the two manholes for underground cable, or between the two splices in buried cable, generally referred to as the "good wire." The faulty cable conductor is usually known as the "bad wire."

(2) Another insulated wire laid on the ground between the two manholes into which is connected the galvanometer of a Wheatstone bridge. Paired parallel or twisted drop wire or any insulated wire of any gauge may be used, one wire as the good wire, the other as part of the galvanometer lead.

(3) A portable Wheatstone bridge where the galvanometer leads are connected to the galvanometer terminal posts.

(4) A flexible lead one end of which is equipped with a probe, such as test pick, needles, or scissors for puncturing the insulation on the test wire. The other end is connected to grounded battery.

(5) "Grounded battery" consisting of a battery of 4.5 volts connected to a water pipe, fire plug or standard ground rod or rods driven into the

*Mr. Gollub is with Philco Corp. in Philadelphia. He was with Bell Telephone Co. of Pennsylvania from 1915 until 1954, when he retired as Eastern Area Transmission Supervisor. He is a member of American Institute of Electrical Engineers and the Franklin Institute of Philadelphia.

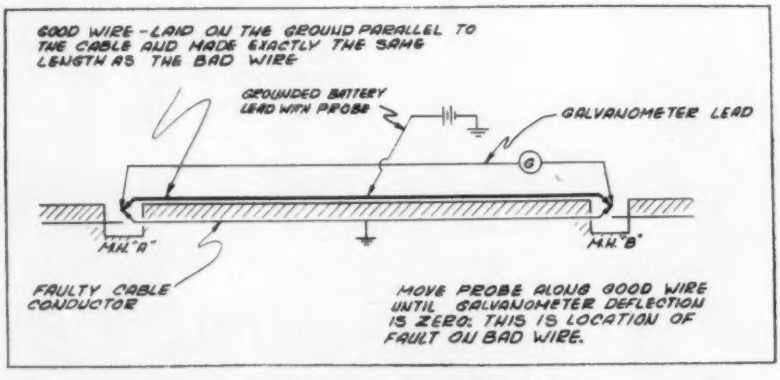
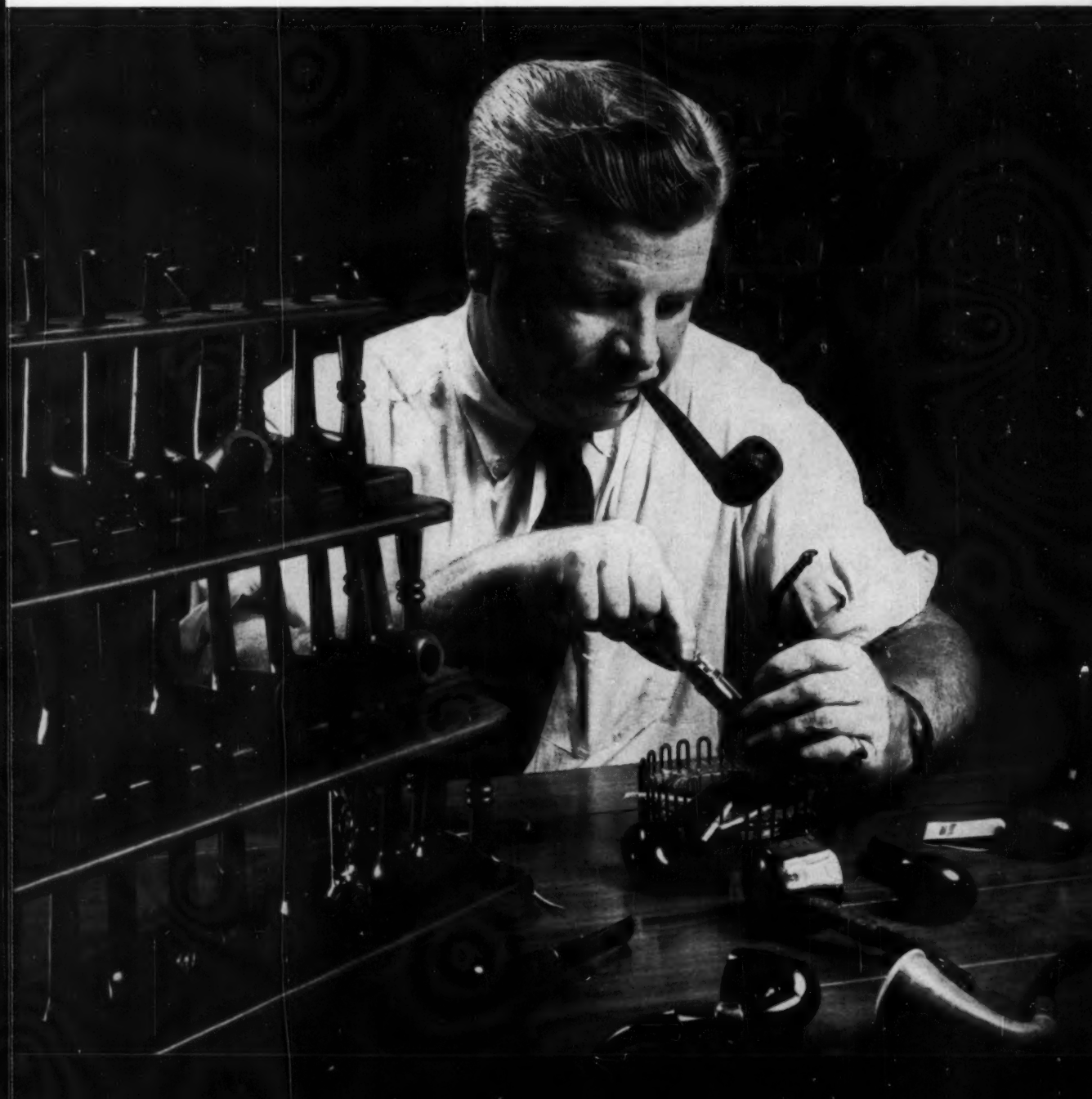

GOOD WIRE - LAID ON THE GROUND PARALLEL TO THE CABLE AND MADE EXACTLY THE SAME LENGTH AS THE BAD WIRE
GROUNDED BATTERY LEAD WITH PROBE
GALVANOMETER LEAD
G
M.H. "A"
M.H. "B"
FAULTY CABLE CONDUCTOR
MOVE PROBE ALONG GOOD WIRE UNTIL GALVANOMETER DEFLECTION IS ZERO; THIS IS LOCATION OF FAULT ON BAD WIRE.

Fig. 1. Good wire direct-connected to bad wire.

"Quality *and* quantity is a combination that's essential to a true pipe collector", says this connoisseur. It's equally desirable for industrial wood users, too. That's why so many of them consistently specify AMCRECO pressure treated products. Take quality. Service records of installations going back several decades show that AMCRECO pressure treatment provides the longest lasting, most dependable wood protection. Quantity? We maintain sizable stocks of treated material at 13 strategically located plants. This assures you delivery of well seasoned treated poles, posts, ties and other timber – whatever the emergency or size of your order.

AMERICAN CREOSOTING CORPORATION AMCRECO PRESSURE TREATED WOOD PRODUCTS Louisville 2, Kentucky

Subsidiary of Union Bag-Camp Paper Corporation



ground. Higher voltage battery will be required where either the fault resistance or the resistance of the test ground is high. Excessive battery voltage should be avoided as it may damage the galvanometer.

Grounded tone may be substituted for grounded battery, and a headphone and amplifier substituted for the galvanometer where the fault and test ground resistances are low. However, where a galvanometer is available, the battery-galvanometer method is preferable.

Section Location Test — Good Wire Direct Connected to Defective Cable Conductor. The test connections for this condition are shown in *Fig. 1.* The bad wire, the good wire and the galvanometer wire are connected together at manholes A and B. The good wire is stretched out on the ground paralleling the cable and made exactly the same length as the cable. At the two manholes, the ends of the good wire are *made exactly the same length* as the cable ends and the wire ends in the splices.

The test pick, or probe, of the grounded battery lead is used to puncture the insulation of the good wire. When the probe makes contact with any point along the good wire, the galvanometer will show a deflection, except at the point precisely over the cable fault when the galvanometer will read zero.

The galvanometer deflections are in opposite directions on the two sides of the zero point so that, in moving the probe along the good wire, it is easy to tell when the zero deflection point has been passed.

Thus, as the probe is moved from test point to test point, along the good wire from, say, manhole A toward manhole B, the deflections will decrease until the zero point is passed when the deflections will increase again, but in the opposite direction. The probing is then slowly retraced toward manhole A until a zero deflection is obtained. Directly below this point is the location of the cable fault.

Section Fault Location — Good and Bad Wires Connected by Means of an Extension Lead. The method outlined above covers the case where the good wire, which is laid on the ground, is of the same length as the faulty cable conductor and *can reach and be connected direct to the ends of the faulty cable conductor.* This is generally true in the case of the buried cable sections where the cable ends can be raised or in the case of underground where the cable splices are racked high in the manhole.

(Continued on page 54)

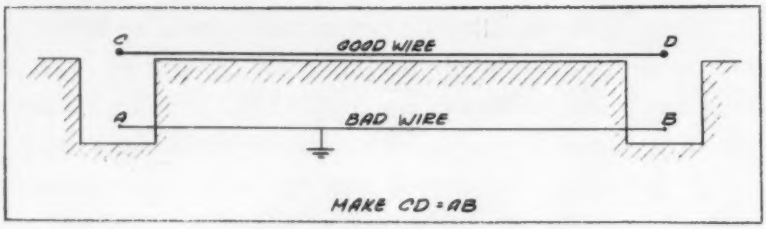


Fig. 2(a)

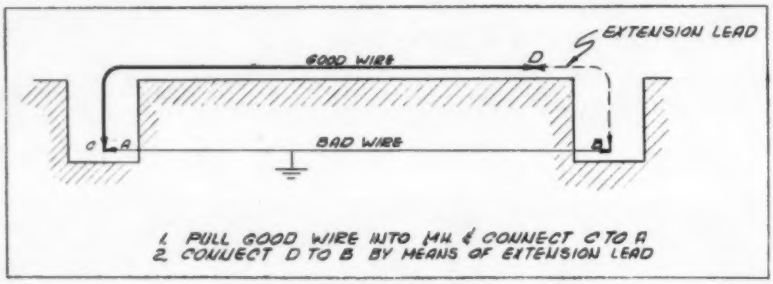


Fig. 2(b)

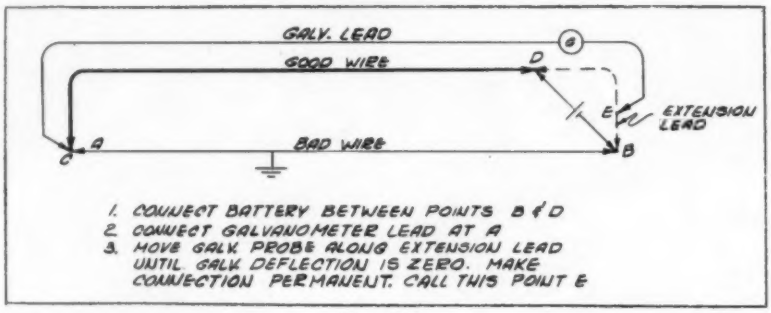


Fig. 2(c)

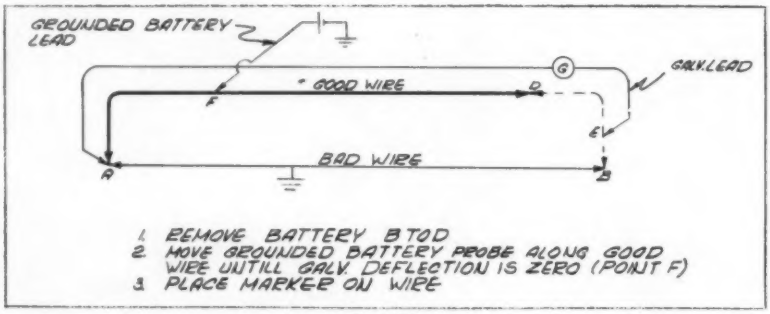


Fig. 2(d)

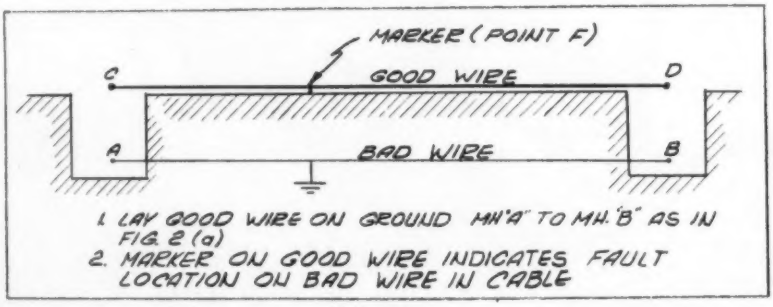

MARKER (POINT F)
C
GOOD WIRE
D
A
BAD WIRE
B
1. LAY GOOD WIRE ON GROUND MH "A" TO MH. "B" AS IN FIG. 2 (a)
2. MARKER ON GOOD WIRE INDICATES FAULT LOCATION ON BAD WIRE IN CABLE

Fig. 2(e)

Fig. 2. Good wire connected to bad wire by means of extension lead.

T.O.P.* TOPICS

By WINNIE B. BURNETT

Part 1

THE NEWS from the "Paystation" front is joyous indeed. The old bugaboo of split-billing is now so simplified that the operator handles most such calls without reference to the Service Assistant.

The aggravating "shortage" and "over-collection" calls have also become routine chores to be handled at the switchboard by the operator, and very rare indeed is the case that requires the old "green pencil" treatment.

Another welcome change is that the tickets are now rated at the amount *actually* collected instead of what should have been collected. With the new practice, on a part-charge call, the original ticket remains the original ticket and a second ticket is prepared *to be the* second ticket. No more Dr. Jekyll and Mr. Hyde stuff where the original ticket became the "collect" or "bill to" ticket, etc.

Of all the long-awaited changes in the handling of calls from public telephones, the most welcome one is that, in the majority of cases, the work is now done by the operator. After all, she is the one who has handled the details so, logically, she should be better able to handle it to conclusion without too much delay. And so the instructions outlined here are written primarily for the operator, concerning new paystation practices.

If there is a shortage and the customer requests the amount due billed to him, secure his name and address and

DATE

SW 1-A OUT (8-58)

FROM

Here Test

NO. CE 4 9999 PO

PERS.

SPEC. INST.

Bill to C. F. Jones
102 B St Here Test

T & C

TO

PL. There STATE Neb

NO. M07 2076

COL. PERS. 175

YES

NO ADD. NAME

OPR. Shortage MINS 7 CLASS

FILING TAX 15

T. C. CHARGE 150

TERM. VIA

ROUTE

Example 1

enter "bill (name and address)" in the "Spec. Inst." space (see *Example 1*). If he says he will mail the amount due, say, "All right, sir. Please mail (amount due) to the telephone company at (name of business office)," and attach a note saying, "Payment for long distance call from (calling telephone number)." Enter the calling party's name and address, followed by "(will mail to business office)" in the "Spec. Inst." space. If he says he will call later and deposit the amount due, say, "All right, sir. Will you call the operator when you are ready to deposit the money," secure and enter name and address in the "Spec. Inst." space followed by "(will deposit later)." In any case, write "Shortage (amount)" across the face of the ticket. If the amount due is $1.00 or more, refer the ticket to the Service Assistant, if locally directed to do so. (In most companies such shortages are referred to the Business Office.)

If you are unable to secure the amount due, write "Shortage (amount due, including tax)" across face of ticket, enter the full number of chargeable minutes in the "Mins." space and enter only the amount actually collected for the message charge and tax in the "Charge" "Tax" Spaces. If necessary, write an explanation on the back of the ticket. Do not attempt to make the

*Traffic Operating Practice

call collect or indicate to the called telephone that there is an uncollected charge unless the calling party has requested you to do so.

If you are requested to reverse or transfer part of the charge on a call from a prepay telephone, explain that it would be difficult to do so, and ask if he wishes to reverse or transfer the entire charge. If this is satisfactory, return the initial deposit and correct the ticket entries accordingly. If this is not satisfactory, handle it as outlined for such calls from postpay telephones.

If either party requests you to transfer part of the charge on a call from a postpay coin telephone, enter "Charged to cld tel (or credit card or place and telephone number of the third telephone)" in the "Spec. Inst." space. Enter the full number of chargeable minutes, but rate the ticket *only for the amount actually collected*, and enter "Shortage (amount due, including tax)" across the face of the ticket. Enter the Federal Tax for the amount actually collected in the "Tax" space.

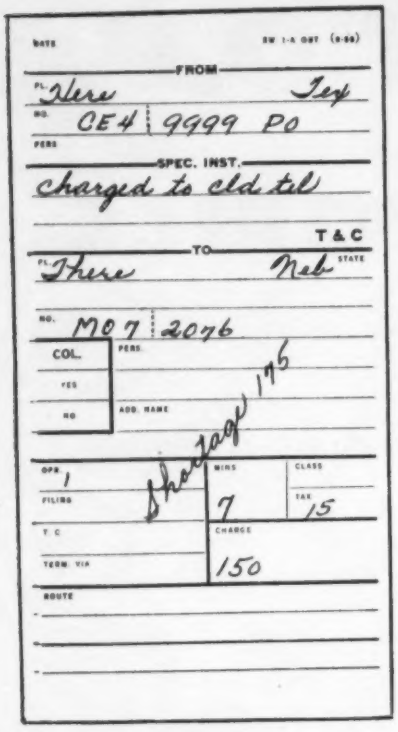
Then prepare a second ticket entering all the necessary details in the proper spaces. Enter the full number of chargeable minutes in the "Mins." space and the amount due, excluding tax, in the "Charge" space. If the amount due is to be billed to the called telephone, secure acceptance of the charge in the usual way and encircle "col." and "yes." If the amount due is to be billed to a third telephone or credit card, enter in the "Spec. Inst." space "Bill (place and telephone number of third telephone)" or "(credit card number)" and draw a line through the number in the "From no." space. Enter "(amount) collected at clg. tel. (start of conv. time)" in report space, pin the tickets together and file with other completed tickets (see *Examples 2* and *3*).

Subtract the amount of the message charge already collected from the total *message* charge to get the amount due, excluding tax.

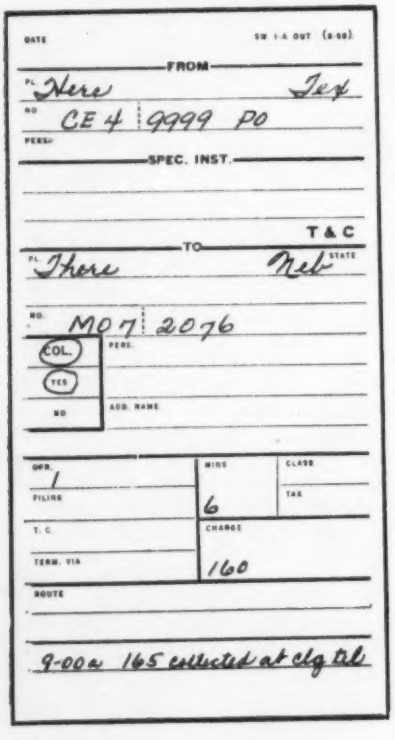
If there has been an over-collection, write "over-collection" across the face of the ticket. Enter the full number of chargeable minutes in the "Mins." space, and the amount actually collected in the "Charge" and "Tax" spaces. If necessary, enter an explanation for the over-collection on the back of the ticket. If a refund is to be made, obtain the customer's name and address and tell him the amount will be refunded by mail. Enter "refund to (name and address)" in the "Spec. Inst." space and refer the ticket to the Service Assistant. Most companies have certain forms and routines for handling over-collections.

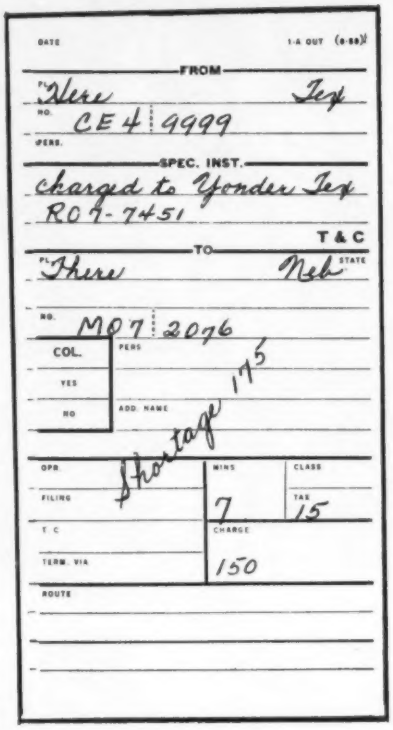
If a call from a public telephone is not completed on the first attempt due to a delay, give the report and say, "Will you try later, please," and cancel the call unless otherwise requested. If you have been requested to leave word, do so. If the call is held and the calling party is not available, or it is not known when he is expected, when it is time to try the call again enter "clg lf tel (time)" in the report space and cancel the ticket.

(Continued on page 51)



Example 2





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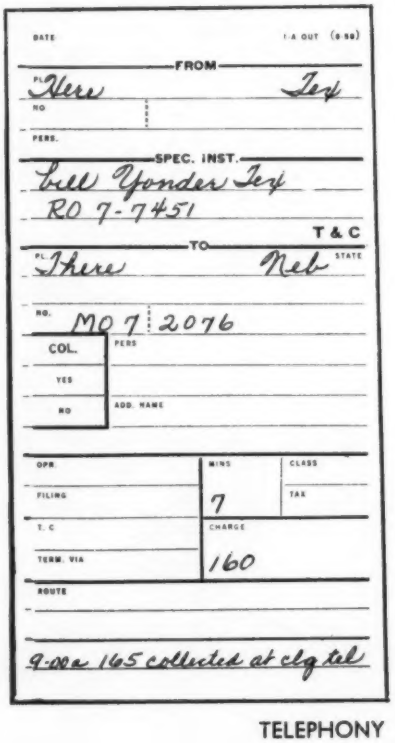


THE Plant Man's Notebook

BY RAY BLAIN, TECHNICAL EDITORIAL DIRECTOR

WITH CUSTOMERS' benefits and savings to the company in view, the Southern Bell has launched a brisk program to promote and sell concealed telephone wiring and built-in telephone outlets in southern homes. The primary aim of the program is to equip new private residences and apartments with adequate "on-premise" facilities to assure customers complete, convenient telephone service—both now and in the future—without exposed wiring.

According to the predictions of economists, nearly two million new private dwelling units will be constructed in the Southern Bell's territory in the next decade. These homes will have an average life of about 40 years and will be occupied by an average of 18 different families. Each of these families may have different telephone service needs and different ideas as to where their phones would be most useful. In order to accomplish this job, architects, contractors, owner-builders and the general public must be sold on the idea that built-in telephone wiring and an ample number of outlets are just as much a part of today's living and as worth while as other "built-ins" that home owners want and buy.

•

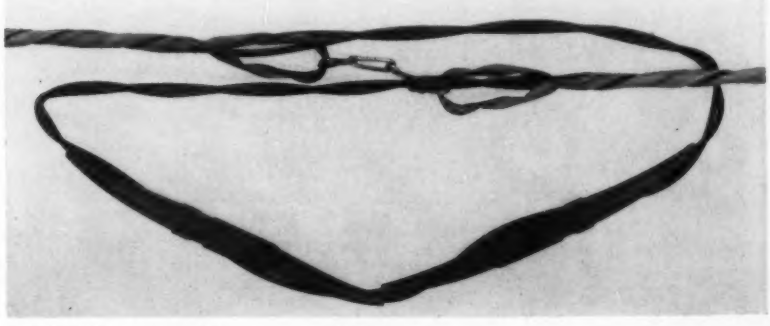
While attending the industry and Signal Corps-sponsored Wire & Cable Symposium at Asbury Park, N. J., recently we had the pleasure of viewing a movie of the helicopter technique for laying the newly-developed multi-channel telephone cable at speeds up to 100 miles an hour.

This method utilizes a compact package which hooks under a standard Army helicopter and carries 10 miles of the cable packed in zig-zag fashion to prevent snagging at high pay-out speeds. The lightweight cable can carry 96 separate two-way conversations simultaneously.

This new development in combat communications was achieved jointly by the U. S. Army Signal Research & Development Laboratory, Ft. Monmouth, N. J., and ITT Laboratories, Nutley, N. J., the U. S. research division of International Telephone & Telegraph Corp.

Numerous problems were encountered in development, one of the most serious being evolvement of a connector such that the half-mile lengths and repeaters could be connected to provide a continuous 10-mile length of cable to be paid out on a single run of the helicopter.

After many months of experimenting, a reliable method was developed by the use of Preformed dead-ends to provide the essential bridge between lengths to carry the high shock load at the connector as indicated in the accompanying photograph.



We examined a new telephone type fire and emergency reporting system recently. A weatherproof type telephone may be equipped with a red signal light if desired. Remove the handset from the hook and a signal comes in on the switchboard in fire headquarters. The telephone number and the time are automatically printed out by a teletype-printer. But when you push a button in the telephone and remove the handset from the hook, the call bypasses the fire department switchboard and comes in on the police department's switchboard. This is considered an ideal system for use in any town or city, be it large or small.

•

The writer was favored recently with the opportunity of spending two very profitable and most enjoyable days in the factory and laboratory of the Automatic Electric factory, at Northlake, Ill. It is always a pleasure to discuss various communication problems with Automatic engineers.

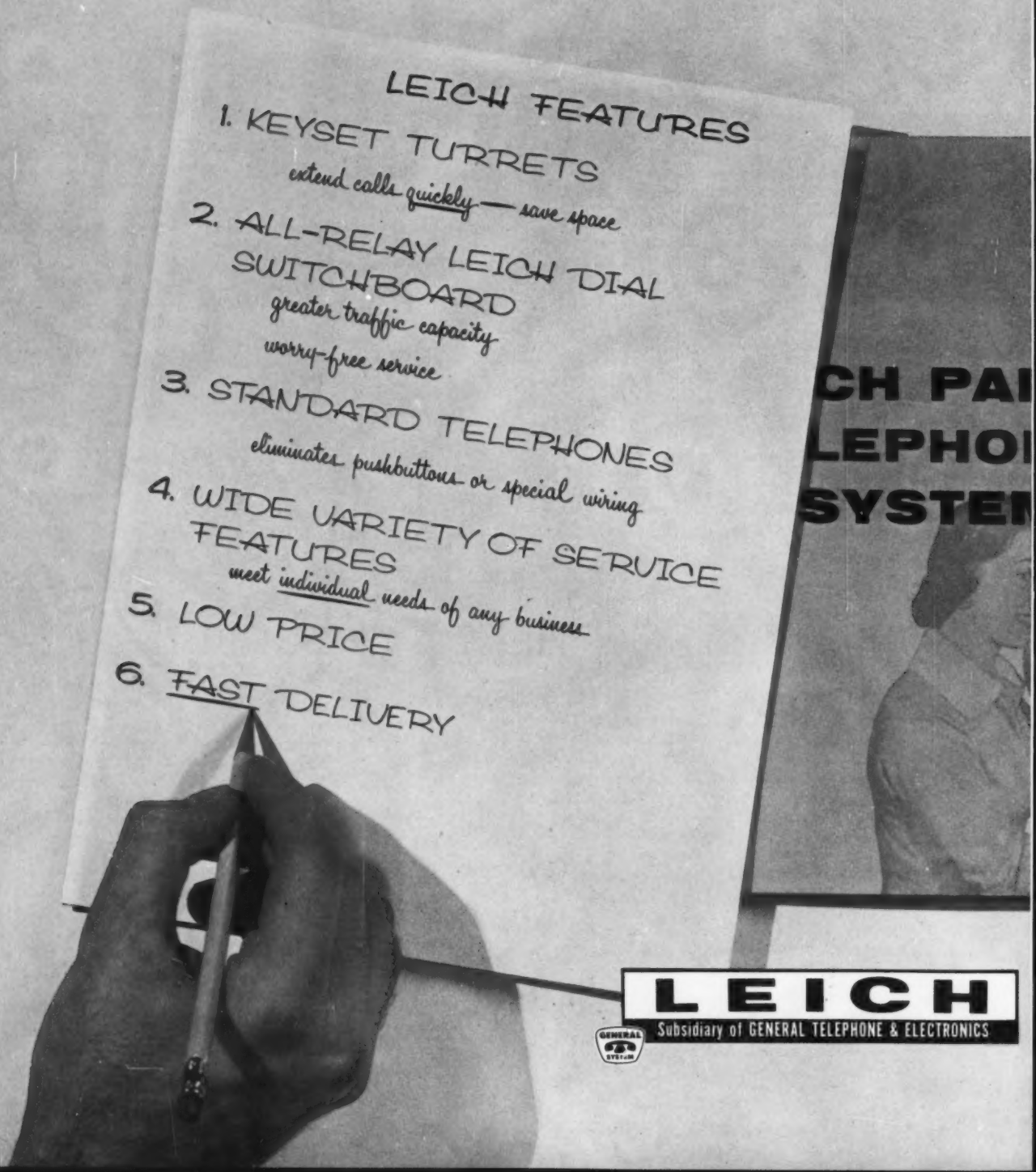
The demonstration of the Type 59 Automatic Ticketing System proved most interesting. The high point of our visit, however, was an extremely interesting explanation of the laboratory's development of electronic switching.

On this trip, we flew from Washington, D. C. to Chicago's O'Hare Airport. It was our first landing at this new jet airport and we were amazed at its activity. While waiting to emplane on our return to Washington, we counted 13 jet airliners parked at the various airport docks.

•

A reader informs us that out in California he observed linemen wearing red plastic vests as a safety precaution while stringing wire along a busy highway. This appears to be an excellent, though new, idea. If any of our readers have had any experience with such a garment we'd like to hear more about it.

Show Why 500 Businesses



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When you put yourself in your subscribers' shoes, it's easy to see what they want most in a PABX. They're looking for compact, modern equipment that offers quick extension of calls, greater traffic capacity, and a variety of service features. They want a PABX that keeps their telephone traffic moving without a hitch.

Because Leich's PABX's offer all of these advantages, they're popular with a great many businesses of all types. In fact, over 500 companies across the country are happy with Leich PABX's. A few of these are—

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"M" System Food Stores, San Angelo, Texas
Nelson Taylor, Inc., Gloversville, New York
American Bank & Trust Co., Monroe, North Carolina
U. S. Army Nike Site, Redmond, Washington
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manufacturers of telephones, switchboards and related apparatus since 1907

Planning in Spotlight

At South Carolina Meeting

By Dan S. Fargo

HIGHLIGHTING the South Carolina Independent Telephone Association's silver anniversary convention in Clemson on Oct. 26 and 27 was the thought-provoking talk of Paul H. Henson, vice president, United Utilities, Inc., Kansas City, Mo.

"We are trying to live in a world today that is fast-moving . . . the tempo of our lives—of our learning, of our earning, of our working, of our production—all these things have increased in tempo," Mr. Henson said. "One of our problems is to try to adjust ourselves to the more complex problems of living in this world today."

He said this involves looking for today's and not yesterday's right answers—planning today's operations so that future requirements and instrumentalities can be accommodated with minimum confusion, displacement, and cost.

On the subject of population, one of three major areas for which, Mr. Henson said, planning is indicated (the others: progress and personnel), he stated:

"It is estimated that there are 175 million people in the U. S. today. From this point of reference, it is estimated that by 1975 there will be 235 million or a 30 per cent increase in 16 years. Further, it is estimated that there will be some 330 million or a 90 per cent increase in 41 years. . . .

"According to my figures, the population of South Carolina is increasing at a more rapid pace than the country as a whole; and the number of Independent telephones in South Carolina is increasing faster than the number of Independent telephones in the continental U. S. It appears that with location, availability of power, industrialization, and natural resources this trend should continue indefinitely. . . .

"We know for one thing that the number of households will increase at a much more rapid pace than in the recent past. With the constantly increasing standard of living, we anticipate greater saturation and more complete communication service.

"Broadly speaking, operating as we do in many of the suburban areas adjacent to large centers of population, Independent companies will be the beneficiaries of urbanization and expansion into the open areas. All of these factors lumped together can only indicate that the market for communication services is going to be made available to us."

Some of the many specific areas in which progress is sure to be registered in the years ahead were listed by Mr. Henson as:

Industry technology.
Finance.
Politics.
Regulatory action.
Marketing.

As regards planning for the first—technological advancement—he said normally telephone property is replaced and augmented on a piece-meal basis, seldom completely. Hence, planning is similarly a piece-meal task. Maximum flexibility should be the objective in every installation or improvement that a company is currently making, he stated; one should leave every possible avenue open to expand and improve services with instrumentalities that may be developed.

Mr. Henson added that the same type of planning is indicated for the other areas of progress, and, he cautioned, as much or more attention should be given to matters of finance, politics, consolidation, earning levels, and regulatory action as is given matters of technological progress.

Mr. Henson saw personnel planning as the most important area of all. He said: "There can be no doubt that people are the most important element of our business today. Additionally, there can be little doubt that people will continue to be the most important part of the telephone business.

"We all realize this but how much time and energy are we devoting to the task of training and improving our personnel?"

Then he observed that, based on the population and progress factors, the Independent industry is going to require:

(1) A greater number of competent management personnel in the future.

(2) A greater number of competent personnel in the skilled crafts area. This is the time to start the development of such people—not at the time that we actually need them. Training classes, management schools—such as the USITA-sponsored programs at Kansas University and Michigan State

Addressing the South Carolina Independent Telephone Association's 25th anniversary banquet is Burnett R. Maybank, lieutenant governor of the state. T. Carter Thomasson (center) of Lancaster was master of ceremonies. At right is C. Bruce Barksdale Jr., of Greenwood, and Mrs. A. C. Capici.

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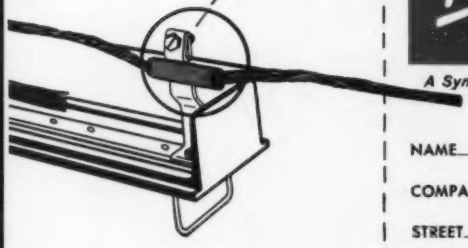

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Please send me current literature describing Ready Access Wire Terminals.

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University — guidance and indoctrination programs, and other such well-known means are available to us today.

(3) The environment and the stimulation so that the personnel of the future will want to achieve without our admittedly superficial efforts to force them to achieve. When one can instill constructive discontent, devotion to duty, and the desire to seek self-improvement in one's people, his personnel planning chores offer no problem.

Presiding over convention sessions was Frank S. Barnes Jr. of Rock Hill, association president. In his report, Mr. Barnes recalled that in 1934, the year the South Carolina Independent Telephone Association was formed, there were 12,818 Independent telephones in a state total of 56,538, and 53 Independent companies operating 97 exchanges. Today there are 47 Independents with 123 exchanges, and over 115,000 telephones. It was also underscored that in 1934 only 2 per cent of Independent telephones were dial, and today only 2 per cent are not dial.

Mr. Barnes stated the association's spring conference in Charleston was informal to encourage as much discussion as possible. The plan was so well received that the directors are considering increasing the number of subjects discussed and the time allotted for the program.

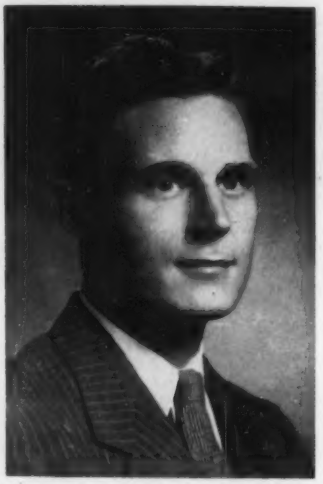
Summarizing progress on the association's toll coordinating committee, Mr. Barnes said the committee's new name is Independent transmission and communications improvement committee. The members have met on an average of once a month and are working on coordination of code assignments and toll planning, essential to the success of the nationwide dialing network.

In the wake of the Sept. 29 and 30 hurricane, much restoration work had been of a temporary nature and there remained a tremendous task of rebuilding, Mr. Barnes said. He added:

"As soon as it became apparent that the damage would be considerable to the Independent companies in the path of the storm a coordination center for assistance was set up to receive offers of and calls for assistance. This effort was handicapped by lack of communications into the area, but, as soon as information could be obtained, arrangements for assistance were made.

"Some companies nearest to the most seriously damaged area were able to determine what help was needed and quickly sent what they could spare.

"It is this traditional spirit of teamwork which has always been a hallmark of telephone people which makes us proud to be a part of such a great industry. Our thanks and appreciation go out to those who joined with their co-workers to restore with all possible speed the communication service which has become the nerve system of our economy."



Frank S. Barnes Jr., of Rock Hill, was elected to his fourth term as president of the South Carolina association.

Stating that South Carolina's Independent telephone growth in 1958 had involved a record 6.9 million dollars spent on new plant and equipment, Mr. Barnes also remarked that 10,300 telephones were added, a growth of 10 per cent. He said, too, that the state's intensive program to obtain more industry depended in part on those in the communications industry continuing to do their part by keeping abreast of changes in the communication field. He then said that there are three essential ingredients involved in furnishing the quality of service required—good plants, good personnel, and good rates.

Speaking during the week of the 10th anniversary of the telephone loan program of the Rural Electrification Administration, Ralph J. Foreman, REA deputy administrator, titled his talk, "Decade of Progress." Mr. Foreman said that in the first years of the program telephone people watched with keen interest and with the attitude of "show me." He went on:

"I feel safe in saying that early misgivings turned out to be largely groundless. People in the telephone industry found that the REA telephone loan program was just what it claimed to be: a long-term program authorized by Congress solely for the purpose of financing new and improved telephone service to rural users.

"They found that REA confined itself to the role of banker and advisor. They found no unnecessary meddling in their operations, and that being an REA borrower in no way curbed or affected their independence as private American enterprise.

"Another thing became increasingly clear, too. I refer to the fact that the program is committed to no favoritism. It is immaterial to REA who does the job of bringing telephone service to the unserved farm. The important thing is: *get the job done.*"

Mr. Foreman observed that this year's loans set a new fiscal year high of $98,923,000. He added: "Although a new high was set, I doubt if it is a record that will stand very long. Loan applications are coming in at the rate of better than 100 million dollars a year. They reveal plans for extensive improvements, acquisitions, and expansion.

"They show that telephone people like yourselves, in common with American business in general, are gearing-up for the big years ahead—the 'boom of the 1960s' that economists are predicting. All signs convince me that the rural telephone industry is gaining momentum and is going places. I am sure that the next 10 years will outstrip the record of the past 10—as good as that record is. . . . the percentage of farms with telephones in the United States (is now) more than 60 per cent."

What kind of plant are REA borrowers building? Mr. Foreman answered "strictly modern." He continued:

"In this age of swift scientific and technological changes, system planners must consider future construction in the light of what I might call the x-factor of obsolescence. I call it the x-factor because it is subject to many factors beyond our control.

"Even if you build the most up-to-date plant you have no assurance that it will not be obsolete, in some respects, within a few years. That can't be helped, of course. It is the price we must pay for progress.

"However, it is poor business to invest in plant that is already old-fashioned and on the way out. That is one reason why REA, in the interest of loan security, stresses modern plant. We know that a modern plant will more than pay for itself before time and change overtake it."

Mr. Foreman said REA telephone borrowers had repaid, as of Oct. 1, 25.4 million dollars—including 12.8 million on principal, 10.4 million in interest, and almost 2.2 million dollars ahead of schedule.

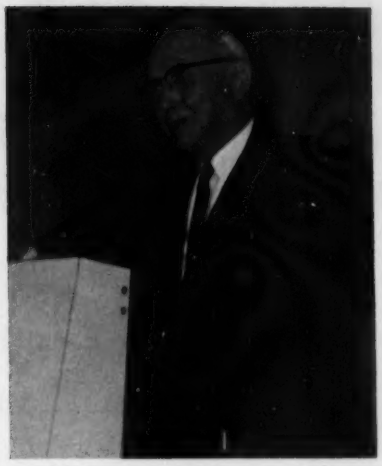
Also, Mr. Foreman said he thinks that those companies making REA telephone loans from now on should pay a rate of interest representing the federal government's actual cost of borrowing long-term money. He said he thought that if REA borrowers could sit down around a table and see what interest the government is paying for its borrowings, then perhaps these borrowers could see their way clear to paying what the government pays.

Hugh A. Barnhart of Rochester, Ind., immediate past president of USITA, stressed in his talk that tele-

(Continued on page 64)

Rural Service Topic At Georgia Meeting

By E. R. Britt*



Speaking on "Looking Forward with your Georgia Public Service Commission" was Matt L. McWhorter, commission chairman.

THE SPOTLIGHT was focused on rural service at the 37th annual convention of the Georgia Telephone Association held in Atlanta on Nov. 11 and 12. C. J. Mathews of Statesboro presided.

Matt L. McWhorter, chairman of the Georgia Public Service Commission, outlined the need for an upgrade of rural facilities.

In his talk, "Looking Forward with Your Georgia Public Service Commission," Mr. McWhorter stated that, although at one time multi-party rural service was adequate, it would not be in the future. He predicted that methods would be provided for upgrading this service.

Speaking on rural telephone progress, David A. Hamil, administrator of the Rural Electrification Administration, quoted a letter he had received, dated Sept. 25, 1950 from H. M. Stewart of Cornelia.

This letter, written when Mr. Stewart was secretary of the Georgia association, predicted the course to be taken by the Rural Electrification Program. Mr. Hamil pointed out how close Mr. Stewart had come in his predictions.

Advancements made by Bell and Independents together were the subject of a speech by J. S. Stone, vice president of Southern Bell Telephone & Telegraph Co.

Outlining the improvements effected by companies in the past 10 years, Mr. Stone's talk was entitled "We Have Come A Long Way Together."

New approaches to old problems were handled in three talks dealing with mark sensing, mechanized billing and Direct Distance Dialing (DDD).

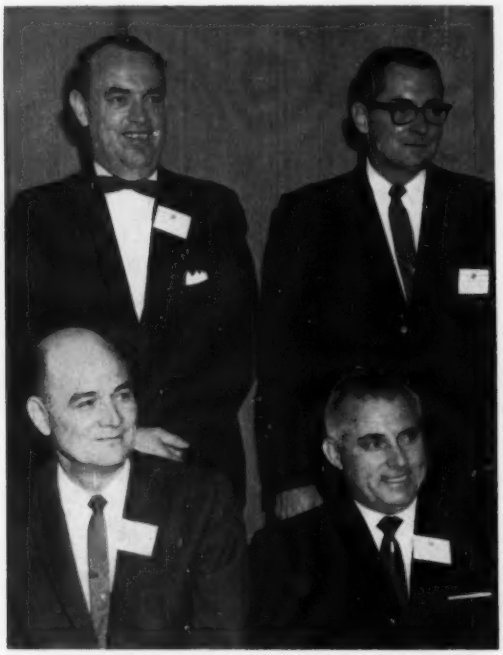
Showing Georgia association members what they can expect in the immediate future were:

J. F. Callaham, Southern Bell Independent relations manager, who showed slides on "Mark Sense Toll Ticketing;
T. D. Robertson of IBM, who explained mechanized billing; and
John Douglas of the Service Bureau Corp., Atlanta, who discussed custom billing.

The part played by communications in the missile field was illustrated in a report by Maj. Charles X. McHugh, chief of the communications planning

(Continued on page 38)

*Mr. Britt is secretary-treasurer of the Georgia Telephone Association.



New officers of the Georgia Telephone Association are, seated, (left to right): C. J. Mathews of Statesboro, president and J. P. Gleason of Tifton, first vice president. Standing are, (left to right): E. R. Britt of Metter, secretary-treasurer and Madison New of Thomaston, second vice president.

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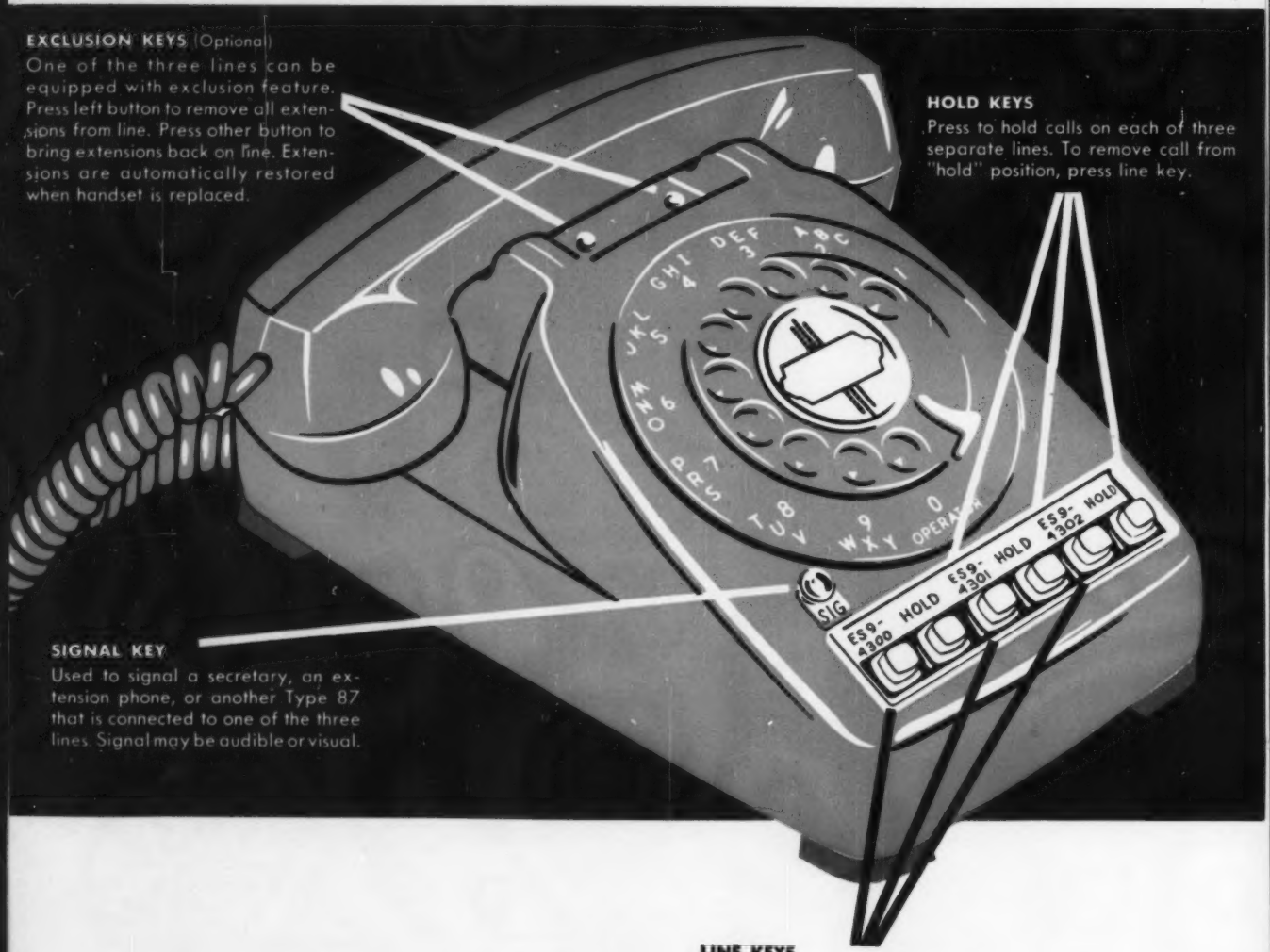
New Type 87 Telephone...

EXCLUSION KEYS (Optional)
One of the three lines can be equipped with exclusion feature. Press left button to remove all extensions from line. Press other button to bring extensions back on line. Extensions are automatically restored when handset is replaced.

HOLD KEYS
Press to hold calls on each of three separate lines. To remove call from "hold" position, press line key.



SIGNAL KEY
Used to signal a secretary, an extension phone, or another Type 87 that is connected to one of the three lines. Signal may be audible or visual.

LINE KEYS
Press to select line or answer incoming call. Lights in keys flash on incoming calls.

BUSINESS SUBSCRIBERS SERVICE AT LOWER COST

a 3-line phone for small offices

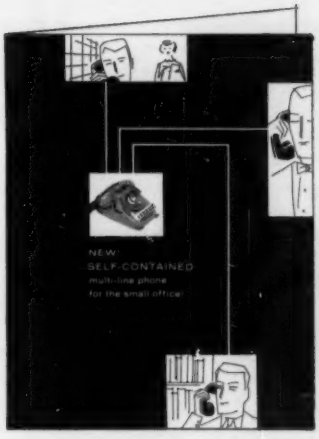
Type 87 is a multi-line phone—with an important advantage. Now—with Type 87—you can offer small business subscribers the economy and efficiency of multi-line service at *lower cost.*

Why is Type 87 lower in cost? Because it's completely self-contained. All control equipment is *inside* the phone. And Type 87 is modern-looking, too. It has the streamlined beauty of our Type 80. Naturally, your prospects can choose from 10 decorator colors.

Who are your prospects? Any subscriber who needs less than 10 phones with a maximum of three outside lines. The list is almost endless—auto dealers, doctors, lawyers, retail stores, jobbers, etc. Even large firms with PBX switchboards will find the Type 87 a valuable supplement within departments.

Look at the opposite page. See how easy—pushbutton easy—the Type 87 operates. And keep in mind that it's adaptable to many different needs.

You can sum up new Type 87 telephone in four words: *more revenue for you!*



SEND FOR DESCRIPTIVE CIRCULAR

For detailed information on the new Type 87 phone, ask for Circular 1934. Write: *Automatic Electric Sales Corporation, Northlake, Illinois. Or, call Fillmore 5-7111. In Canada, Automatic Electric Sales (Canada) Ltd., Toronto 16.*

AUTOMATIC ELECTRIC GENERAL SYSTEM

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Pictured receiving a plaque from Bill Bryan, assistant vice president Southern Bell Telephone & Telegraph Co., is Judge E. B. Emery. The Judge is the author of a book entitled "Independent Telephony in Georgia." The award honored him for his 62 years of service to the industry.

division of the Redstone Arsenal, Huntsville, Ala.

Major McHugh opened with a film on the various rockets and missiles. Next in his presentation came a movie on space travel documenting a simulated trip to the other side of the moon. The major reminded the conventioneers, that the telephone industry had a responsibility to meet in communications —outer-space-wise.

Three hundred and twenty-nine persons were registered at the convention.

Directors elected to serve for three-year terms are: Downing Musgrove of Homerville, Madison New of Thomaston, John Cozart of Valdosta, Jim Evitt of Ringgold and Arthur Fincher Jr. of Canton.

Those whose terms expire in 1960 are Glenn Bryant of Hinesville, C. J. Mathews of Statesboro, Mansfield Jennings of Hawkinsville, John Birchmore of Comer and J. L. Kirk II of Moultrie.

Holding directorships which expire in 1961 are H. C. Hearn of Claxton, Cam Lanier Sr. of West Point, Horace Vaughn of Chickamauga, J. F. Callaham of Atlanta and J. P. Gleaton of Tifton.

The directors elected the following officers: President, Mr. Mathews; first vice president, Mr. Gleaton; second vice president, Mr. New, and secretary-treasurer, E. R. Britt of Metter.

C. J. Mathews is shown as he presided over the first session of the Georgia Telephone Association's convention.

Ladies luncheon held during the Georgia convention and sponsored by the Lindsay Telephone Supply Co. In middleground are Arthur W. Barnes (left), Lindsay's manager in Atlanta, and George McGinnis.

Book Review

"BASIC PULSES," by Irving Gottlieb; 176 pages, illustrated; $3.50.

A pulse can be more than the wave shape emitted by a telephone dial or a telegraph key. It can be of an infinite number of shapes and sizes, and can behave in some interesting ways in different types of circuits. Telephone men have been up against this for a long time in teletypewriter and telephotograph circuits. Some are really on a spot, now that data transmission circuits are coming into the telephone plant.

To understand data transmission or electronic switching, you must know the fundamentals of pulses and how they behave. This book is full of large illustrations of the kind a teacher would make on a blackboard.

You can almost get the full benefit of the book by looking at the pictures alone. This is a book to get for your library even if you don't get around to reading it until next year. It can be purchased from TELEPHONY.

Wheatstone Bridge Measurements

By JOHN A. BRACKEN

Part 5

OCCASIONALLY the normal resistance of an open wire line circuit becomes unequal, or as commonly expressed, "unbalanced." This is due to a change in the resistance of one or perhaps both conductors or to a defective splice, resulting in poor transmission.

The difference in resistance between the line wires may be determined by means of a Murray measurement. Suppose for example, a line circuit having a normal resistance of 200 ohms, is suspected of being unbalanced. Then:

(1) The line wires are joined together and grounded at their distant end, as shown at point "L," in *Fig. 1.*
(2) The line wires are then connected to the bridge "X 1" and "X 2" binding posts, and a local ground connected to the bridge "GR" binding post.
(3) A loop resistance measurement of the line circuit is made, and a reading of say, 240 ohms is obtained.
(4) A Murray measurement of the ring (R) side of the line is made, and a reading of 716 ohms obtained.
(5) The tip and ring conductors are then transposed at the bridge "X 1" and "X 2" binding posts and a Murray measurement of the tip (T) side of the line obtained, say 1400 ohms.
(6) The respective resistance of the line circuit tip and ring conductors is by formula: $r = RL \div (M + R)$ and $r_1 = RL \div (M + R)$ where:

r = tip conductor resistance.
r_1 = ring conductor resistance.
R = Murray reading.
L = loop resistance measurement.
M = Murray ratio dial setting (in this case M 1000).

Then, $r_1 = R\ L \div (M + R)$, or $716 \times 240 \div (1000 + 716) = 100$ ohms, the resistance in the ring side of the line.

For the tip it is $r = RL \div (M + R)$, or $1400 \times 240 \div (1000 + 1400) = 140$ ohms, thus indicating an unbalance of 40 ohms in the tip side of the line.

Adding the two values together should equal the measured loop resistance of the line circuit, or $100 + 140 = 240$ ohms.

In Wheatstone bridge measurements for the purpose of determining the location of such faults as short circuits and crosses in an open wire line, care-

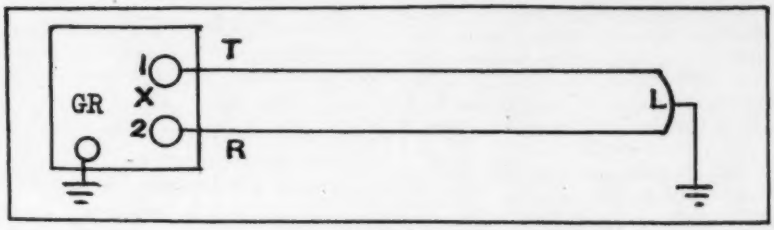

Fig. 1

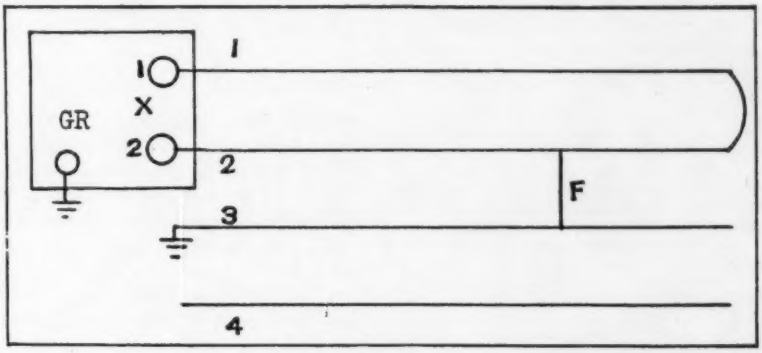

Fig. 2

LINE WIRE TABLE

Kind of Wire	Gauge	Size	Diam. eter in Mils	Area in Circular Mils	Diam- eter in Milli- meters	Ohms Per 1000 Ft. at 68°F	Ohms Per Loop Mile at 68°F	Feet Per Ohm
Hard Drawn Copper	New British Standard	8	160	25600	4.064	0.381	4	2627
		10	128	16384	3.251	0.633	7	1419
		12	104	10816	2.642	0.958	10	1043
		14	80	6400	2.032	1.62	17	616
Copper-weld	American	10	102	10404	2.588	2.54	26	395
		12	81	6561	2.052	4.03	42	248
Steel 85	Birming-ham	12	109	11881	2.769	6.5	68	155
Steel 135	Birming-ham	12	109	11881	2.769	7.4	76	138
Iron	Birming-ham	10	134	17956	3.404	4.17	44	240
		12	109	11881	2.769	6.31	66	159
		14	83	6889	2.108	10.9	114	92

Table 1

ful consideration should be given to the nature of the particular fault involved.

For instance, short circuit is a type of line trouble in which both wires come into direct contact with each other. Short circuits are of three general classes:

(a) Low resistance, commonly called a solid short,
(b) Partial short circuit, due to the establishment of a high resistance path between the two line wires.
(c) Swinging short, an intermittent contact between the two line wires due to the action of the wind.

The distance to a low resistance short circuit may be determined by means of a simple resistance measurement. For example, suppose the resistance measured to the fault is 336 ohms and the resistance per loop mile of the wire is 42 ohms, then the distance to the fault may be calculated by the formula: D = R ÷ LM, where:

D = distance in miles to the fault.
R = measured resistance in ohms, to the fault.
LM = known resistance per loop mile of the line wire (see *Table 1*).

In this case the distance to the fault is D = R ÷ LM or 336 ÷ 42 = 8 miles.

Crosses are a type of line trouble which results from electrical interference between two or more line circuits, and are classified as:

(a) Direct contact cross between the line wires, or crossed by means of a metallic conductor other than the line wires. In such cases, a condition known as crosstalk is usually set up, and the telephone conversation on one of the crossed circuits is heard on the other.
(b) Low resistance cross.
(c) High resistance cross.
(d) Weather cross, occurring in damp, foggy, or rainy weather. The line wire, insulators and crossarms are coated with moisture, causing a conducting path that permits the line current to leak between other circuits. This action reduces the current value required to operate the telephone equipment connected to the lines beyond the leak.

The fact that weather crosses make their appearance under these unfavorable conditions, affords some indications as to the probable nature of the interference at such times. A cross between two line circuits in dry weather is usually regarded as the result of a direct metallic contact.
(e) Swinging cross, due to the action of the wind.
(f) Intermittent cross, due to an occasional expansion of the line wire on a very hot day, permitting the wire to sag and make contact with another line.
(g) Inductive cross, due to improper transposition of the line wires with respect to other circuits, causing crosstalk.

Usually there is an appreciable resistance in crossed line wires which may vary in amount due to corrosion, poor contact between the wires, or other

(Continued on page 54)

The Christmas Spirit

By Mayme Workman

I am the Christmas Spirit! I enter the home of poverty, causing pale-faced children to open their eyes in pleased wonder.

I cause the miser's clutched hand to relax, and thus paint a bright spot on his soul.

I cause the aged to renew their youth and to laugh in the old, glad way.

I keep romance alive in the heart of childhood, and brighten sleep with dreams of woven magic.

I cause eager feet to climb dark stairways with filled baskets, leaving behind hearts amazed with the goodness of the world.

I cause the prodigal to pause a moment on his wild, wasteful way, and to send to anxious loved ones some little token that releases glad tears—tears which wash away the hard lines of sorrow.

I enter dark prison cells, reminding scarred manhood of what might have been, and pointing forward to good days yet to come.

I come softly into the still white home of pain, and lips that are too weak to speak just tremble in silent, eloquent gratitude.

In a thousand ways I cause the weary world to look up into the face of God, and for a little moment forget the things that are small and wretched.

I am the Spirit of Christmas!

—by E. C. Baird

•

CHRISTMAS MEANS many things to different people. But surely the one essential truth which it stands for and the one fundamental lesson which it teaches is that God must have loved the human race a great deal to come down to earth and take human flesh, so that in that flesh He might suffer the punishment man deserved and thus redeem him of his sins.

And with this is the correlative lesson taught by Christmas, that gratitude should impel every human creature to love God in return with his whole heart and mind and soul. Christmas, for all its festive spirit and holiday decorations, is an empty and hollow thing unless it inspires and awakens that love in our hearts.

Christmas is a generous, unselfish time. What fun it is to give pleasure to others—children, helpmates, friends, co-workers! Christmas is not simply a date on the calendar, or the celebration of an event that took place far away and long ago. Christmas is a continuing spirit, a frame of mind, a state of heart.

While the giving and receiving of gifts are a part of Christmas, the mood of the giving is most important. Only those who feel "it is more blessed to give than to receive" have the Christmas spirit. Only those who are more concerned about making others happy than about being made happy, can really keep the day.

Christmas is the spirit of good will. We say, "Merry Christmas," to people we hardly know—and mean it, too. We do want them to be of good cheer. We do want them to be happy. How different the world would be if we lived in that frame of mind throughout the balance of the year!

Let us not be guilty of quickly shedding the Christmas spirit. The Yuletide is not an end in itself, but an occasion when the Christmas Spirit can be renewed, replenished and thoroughly reconditioned to function throughout the ensuing year.

Christmas, is after all, nothing more or less, than a joyous rededication to the principles of Christ. As such, it is more than another holiday, and its influence should remain with us in the coming months.

To the publishers of TELEPHONY and their staff and to all who read this column, may the Infant Jesus bless and keep you, and may the Spirit of Christmas remain in your hearts forever, that is the sincere wish of the writer.

NEW! EXTRA LONG RECEIVER Koiled Kords*

NOW IN COLOR

Extra long receiver KOILED KORDS in color enable you to offer another service to those subscribers who want to move more than four and a half feet from their instruments.

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* KOILED KORDS is a trade mark of KOILED KORDS, INC.

Courts and Commissions

SW States Gets Raises At Five Texas Exchanges

An agreement has been reached between the Southwestern States Telephone Co. and the city of Carrollton, Tex. on:

(1) An immediate rate increase.

(2) Extended area service, with a corresponding rate increase, for all Carrollton subscribers with nearby Farmers Branch, Renner, and Addison, by October, 1960.

(3) The inauguration of extended area service on an optional basis, between Carrollton and the Dallas central zone, with a rate increase by October, 1961.

The Dallas EAS will be available only to one-party business and one-party residence Carrollton subscribers, with the rates to be the same as those in effect at the company's Irving exchange.

The company, which provides dial service to 1,509 stations at Carrollton, was also granted a 25-year franchise.

The rate increases will be as follows in Carrollton:

	Old
One-party business	$4.75
Two-party business	4.25
One-party residence	3.25
Two-party residence	2.75
Four-party residence	2.25
Rural business	3.75
Rural residence	2.50

Other recent rate increases for the Southwestern States company in Texas include:

Lake Brownwood, dial, 70 stations; effective 12/6/59:

	Old	New
One-party business	$10.50	$10.50
Two-party business	5.50	8.25
One-party residence	5.50	5.50
Two-party residence	3.75	4.35
Four-party residence	3.25	3.25
Rural business	4.25	7.00
Rural residence	3.00	5.25

Novice, dial, 48 stations; effective 1/1/60:

One-party business	$6.50	$8.75
Two-party business	5.50	7.25
One-party residence	4.75	5.75
Two-party residence	3.75	4.75
Four-party residence	3.00	3.75
Rural business	5.50	7.00
Rural residence	4.25	5.25

Dripping Springs, dial conversion, 189 stations; effective 12/26/59:

One-party business	$2.50	$11.00
Two-party business	—	9.00
One-party residence	2.00	6.75
Two-party residence	1.75	5.50
Four-party residence	1.00	4.50
Rural business	2.50	8.00
Rural residence	2.00	5.50

Wimberly, dial, 253 stations; effective 11/26/59:

One-party business	$8.00	$9.50
Two-party business	—	8.25
One-party residence	4.75	6.00
Two-party residence	4.00	5.00
Four-party residence	3.25	3.75
Rural business	5.50	7.00
Rural residence	3.50	5.25

N. C. High Court Refuses To Rush Franchise Case

The North Carolina Supreme Court on Dec. 1 declined the request of the North Carolina Utilities Commission that the court speed up disposition of a case testing a 1959 state law validating free or reduced telephone rates for

(1) *Rates Eff. 11-1-59*	(2) *Rates Eff. 10-1-60*	(3) *Rates Eff. 10-1-61*
$8.00	$11.00	$16.00
7.00	8.50	
4.00	5.25	6.00
3.25	4.50	
2.75	4.00	
7.00	8.00	
5.25	5.50	

cities and towns under franchise agreements.

The action of the state's high court means that the case will not be heard before Mar. 1, 1960, when cases from the Seventh Judicial District will be called. The commission had sought to present arguments at once.

The North Carolina commission ruled out franchise agreements, in an order granting a rate increase to the Carolina Telephone & Telegraph Co., Tarboro, in 1958, and the cities of Rocky Mount and Wilson appealed to the Superior Court.

While the case was pending, during the 1959 session of the North Carolina Legislature, a law validating the agreements was passed. Superior Court Judge Walter J. Bone of Nashville held rate concessions to be a valid consideration for granting franchises to telephone companies.

The commission still contends its order was a proper one, and has appealed to the Supreme Court in order to test the validity of the new law. It has never rescinded its earlier order, and the companies are continuing to bill the municipalities. It was when the cities protested recently (TELEPHONY, Nov. 28) that the commission moved in in an attempt to speed up the court consideration of the case.

Sale of Stocks Authorized For Company in N. C.

The Morris Telephone Co., Roxboro, was authorized on Nov. 30 by the North Carolina Utilities Commission to sell 500 shares of its preferred stock, and 8,000 shares of common stock to help finance an expansion program (TELEPHONY, Nov. 21).

The $100 par 5 per cent cumulative preferred stock will be offered, the company said, to present stockholders and/or the public at $100 a share; and the common, with a par value of $25, will be offered at $30 per share.

In its petition, the Morris company stated that it expects to spend "not less than $300,000 in the next year, and perhaps, $600,000 in the next three years." Proceeds will be used to build additional facilities at the Roxboro exchange.

The company serves subscribers in Roxboro, Hillsboro, Yanceyville, Efland, and in Prospect Hill.

Two Ask to Sell in Mo.

The applications of the Birch Tree Telephone Co. to sell and of South Missouri Telephone Co., Steelville, to purchase; and of the Golden City Telephone Co., Inc., to sell and the South-

(Continued on page 46)

ACME VISIBLE V-ANGLE TRAYS speed subscriber service by reducing card-handling time

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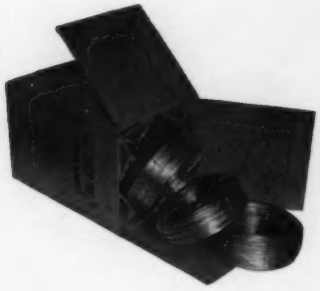
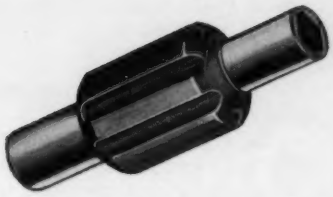
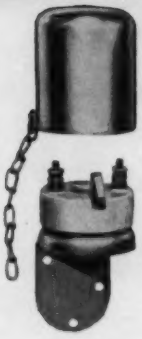


Copperweld Lashing Wire—.091 or .080 special soft copperweld lashing wire is recommended for areas subject to corrosive fumes or atmosphere; should be used with copper or copperweld strand. Coiled by CABLE SPINNING EQUIPMENT COMPANY.



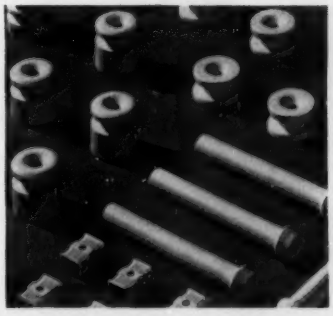
Terminal Socket Wrench—Finger type, easy to carry pocket tool (3" x 1") with plated steel hex ends for 3/8" and 7/8" nuts and deep sockets for terminal posts. Bright red phenolic gripping area helps prevent accidental loss and insulates the two steel ends from each other.
RELIABLE ELECTRIC COMPANY



Developed for Better Insulation, the Cook Testerm Drop Wire Connector improves connecting and testing methods, occupies less space and provides terminating facilities for drop wire. Made by COOK ELECTRIC COMPANY.

MoPeCo propane tent heaters give fast dependable heat to splicers working aerial cable in cold, wet and windy weather. Two sizes—8,000 or 12,000 BTU • 50 hr. maximum output, 20 lb. tank • Two 4-ft. adjustable chains • Low pressure regulator • 30-ft. L.P. gas hose • Weight: 9 pounds • Size: 10" diameter x 14" high. MORRISON-PELSUE COMPANY.

Big Capacity in Small Size. Unique positive plate in Exide-Tytex Battery has large area of active material that results in high capacity. Exclusive patented Silvium grid resists corrosion — prolongs battery life. Taperless plastic jars save one-third space. Exide Industrial Division, THE ELECTRIC STORAGE BATTERY COMPANY.



Telephone Insulators manufactured by PORCELAIN PRODUCTS CO., Carey, Ohio. Numbers 6066, 6064, and 6065 meet exacting AT&T specifications for "C," "S," and "T" knobs, respectively. Number 4 and 4-two-groove, as well as numbers 6061 and 6062, are manufactured to the same high quality standards that have established Porcelain Products Co. as a leading supplier of telephone insulators since 1894.

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west Dial, Inc., Sarcoxie, to purchase, were filed respectively with the Missouri Public Service Commission on Dec. 1 and Dec. 2.

General of Cal. Markets $30 Million Bond Issue

General Telephone Co. of California on Dec. 2 awarded its 30-million-dollar issue of first mortgage bonds, Series M, due Dec. 1, 1989 to The First Boston Corp. and Equitable Securities Corp., representing a group (TELEPHONY, Nov. 21).

The securities were awarded at a price of 99.39 for a 5 per cent coupon, or on approximately a 5.04 per cent cost-of-money basis.

The First Boston Corp. and Equitable Securities Corp. are placing the bonds on the market for general distribution at par.

Competing bids for the bonds, each with a 5 per cent coupon, were submitted by groups headed by Halsey, Stuart & Co., Inc., 99.38999, Paine, Webber, Jackson & Curtis and Stone & Webster Securities Corp., 98.81, and White, Weld & Co. and Kidder, Peabody & Co., 99.38.

General Telephone Co. of California will use the net proceeds to repay short-term bank loans and for construction and expansion purposes.

Ask Financing OK in Mo.

The Twin Lakes (Mo.) Telephone Co. on Nov. 20 filed application with the Missouri Public Service Commission for permission to borrow an additional sum of $250,000 from Stromberg-Carlson, and to issue mortgages and/or deeds of trust on its property. The Twin Lakes company also on the same date, asked to issue 1,000 shares of its preferred stock.

Approve Sale in Minn.

The Minnesota Railroad & Warehouse Commission on Nov. 25 approved the sale of the Northland Telephone Exchange, Hill City, to the Northland Telephone Co., Hill City. The Northland exchange serves approximately 239 stations.

Obituary

CYNTHIA T. ADEE, 56, president and general manager of the Delhi (N. Y.) Telephone Co. died on Dec. 2 after suffering a second heart attack. Miss Adee had been confined to the Delhi hospital since Nov. 17 when she had suffered a "mild" heart attack. She was apparently making satisfactory progress toward recovery when the fatal attack occurred.

Miss Adee was a native of Delhi. She graduated from Elmira College for Women. For one year, she taught in the public school system in Puerto Rico but returned to Delhi to care for her ill mother and to tend the family's business interest, Delhi Telephone Co. When her mother died in 1946, Miss Adee became president and general manager.

Survivors include her brother, Horatio, vice president of the Delhi company; a sister, Mrs. Charles Mitchell of Albany and three nieces.

Two Who Did Not Yield Line Face Hearing in New Jersey

Two women of the Millburn, N. J. area, who on Nov. 14 allegedly failed to yield a party line to Dr. Marvin Becker, so that he could telephone for an ambulance for an 81-year old heart attack victim, faced a municipal court hearing at Millburn on Nov. 28.

The doctor told the police, when he attempted to make the telephone call, the women had said they didn't care "anything about any patient," and the victim's daughter then had to use a neighbor's telephone.

Mrs. Mary C. Zelinski and Mrs. Jeanette Hausler reportedly may lose their telephones if they are found guilty of refusing to give up the line in an emergency, which is in violation of New Jersey's Disorderly Persons Act.

Gov. Robert B. Meyner signed into law on Dec. 27, 1955 a bill making it illegal to hang on to a telephone party line when somebody else wants to make an emergency call. The law provides a penalty of up to year in jail and $1,000 fine. In the definition of the law, emergency calls are those "relative to the protection of human life or property when the summoning of aid is essential."

Independents To Have Largest Station Gain Yet During 1959

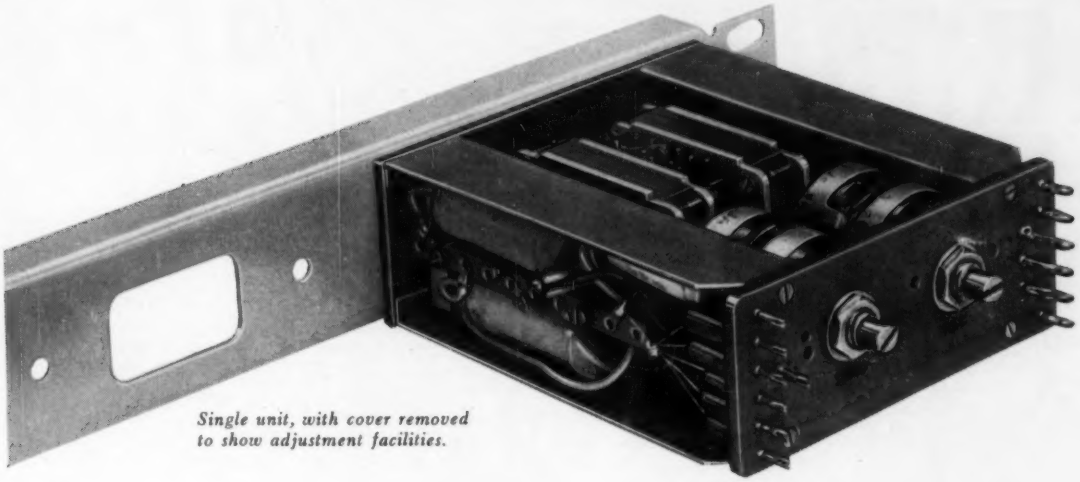
The Independent telephone industry during 1959 expects to record the largest station gain—715,200—in any single year of its history, the United States Independent Telephone Association reported in a member letter.

According to the association's statistical department, on Dec. 31, 1958, the Independents had 10,184,000 telephones in service as against an estimated total of 10.9 million at the end of Dec. 31, 1959, which is a 7 per cent gain.

Independent telephones have increased by 36 per cent during the past five years. Station gains during the four years previous to 1959 were recorded as follows: 1958—513,000; 1957—560,000; 1956—651,000; 1955—465,000.

The USITA says that there is evi-

A compact 4-wire terminating set



Single unit, with cover removed to show adjustment facilities.

Segregation of hybrid terminations and signaling equipment from the four-wire carrier or voice frequency circuits gives great flexibility in the methods of terminating the circuits.

The Siemens Ediswan 4-wire Terminating Set (Type TSA 1711) is a compact and robust unit which can be arranged for panel or rack mounting, and will deal with all practical switching methods.

Circuit arrangements allow for any of these applications:

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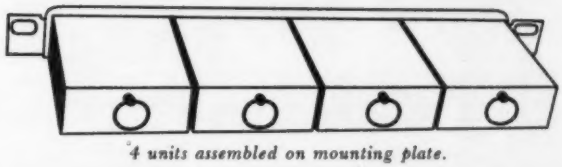

4 units assembled on mounting plate.

Max. projection from face of mounting plate	**5-1/16 in. (130 mm.)**
Height 1-11/16 in. (43 mm.)	**Width** 4-1/8 in. (105 mm.)
Weight (single unit)	**2 lb. 1½ oz. (0.95 kg.)**
Weight of 4 units on 19 in. (483 mm.) x 1¾ in. (44 mm.) mounting plate	**9 lb. 10 oz. (4.4 kg.)**

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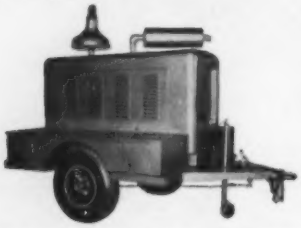

Units provide both single phase power for lights and 3-phase power for other needs. Many exchanges in an area can be served by a single unit.

Telephone systems use U.S. portable generating sets for on-the-spot power needs. Sizes 750 watts and larger, air-cooled.

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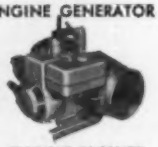

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dence that "a part of the increased station gain is due to increased marketing and sales activities on the part of many companies."

Annual gross revenues are expected to show a gain of 9.2 per cent—from 808.8 million dollars in 1958, to an estimated 882.9 million dollars for 1959.

Expansion expenditures during 1960 will be 450 million dollars, it is estimated.

Comparative figures for 1958 and 1959, reported in the member letter, are as follows:

	Dec. 31, 1959 (est.)	*Dec. 31, 1958*
Total telephones	10,900,000	10,184,800
No. of operating companies	3,600	3,867
No. of exchanges	10,760	10,765
Investment in telephone plant	$3,651,500,000	$3,187,050,000
Gross revenues	882,900,000	808,800,000
No. of employes	100,000	98,300
Daily local calls	52,700,000	49,143,000
Daily long distance calls	1,800,000	1,700,000

REA Approves Allocation Of Seven Telephone Loans

THE RURAL Electrification Administration on Nov. 27 approved seven telephone loans, to help provide new and improved telephone service, as follows:

Dos Palos (Cal.) Telephone Co.; $602,000. These funds will help the borrower to improve service for 48 subscribers and to furnish initial service to 125 subscribers. In addition, provision is made in the loan to install automatic toll ticketing equipment in the Dos Palos exchange; provide for an increase in the proportion of private and semi-private lines; install mobile radio telephone equipment to serve 10 subscribers and for system maintenance and completion of the authorized system.

The subscribers who will receive improved service are now served from four subscriber-owned lines in the Dos Palos area. The borrower proposes to acquire these small companies.

REA loans to this company now total $1,317,000 which will benefit 2,306 subscribers. The completed system will consist of three exchanges which are now furnishing dial service to approximately 1,700 subscribers.

Richard D. Crowe is president and manager of the Dos Palos company.

•

Mid-Century Telephone Cooperative, Canton, Ill.; $275,000.

This loan will be used to improve service for 443 subscribers and to furnish initial service to 59 subscribers. The existing subscribers now receive manual service through the Victoria Mutual Telephone Co. and a small switcher company at Dahinda. The borrower proposes to acquire these facilities and rehabilitate them.

A new dial office will be constructed at Victoria to serve both areas. REA loans to this borrower, now totaling, $944,000, will benefit 1946 subscribers. The completed system will consist of seven exchanges, six of which now furnish dial service to approximately 1,200 subscribers.

Calvin Cook is president and Clyde E. Eskridge is manager of the Mid-Century cooperative.

•

The Craw-Kan Telephone Cooperative Association, Girard, Kan.; $445,000.

Funds from this loan will help to improve service for 473 subscribers and to furnish initial service to 205 subscribers. The company recently acquired three small companies which now provide manual service to the existing subscribers. They are: Savonburg Farmers Mutual Telephone Co.; Katy Telephone Co., Elsmore; and Stark Mutual Telephone Co. The borrower will be reimbursed for these acquisitions.

A new dial central office will be built at Savonburg to serve the three areas. REA loans to the borrower now total $2,716,000 which will enable it to furnish new and improved service to 5,774 subscribers. Fifteen of the proposed 16 exchanges are now furnishing dial service to approximately 4,725 subscribers.

Lawrence Thorp is president and John Frerichs is manager of the Craw-Kan cooperative.

•

Thermal Belt Telephone Co., Tryon, N. C.; $221,000.

This loan will enable the borrower to complete its system as authorized under previous loans.

The company has received REA loans totaling $1,361,000, to provide dial telephone service to 3,337 subscribers in North Carolina and in South Carolina. The completed system will consist of five exchanges.

Mrs. B. H. Douglas is president of the Thermal Belt company, and B. H. Douglas is manager.

•

Sooner State Telephone Co., Oklahoma City, Okla.; $375,000.

This loan will help to furnish initial service to 250 subscribers and to improve service for 466 subscribers. The borrower plans to acquire the Apache Telephone Co. which now furnishes manual service to the existing subscribers. A new dial central office will be constructed at Apache.

This borrower has now received REA loans totaling $1,055,000 which will finance new and improved service to 2,076 subscribers. The completed system will consist of five exchanges.

Mrs. Gloria Sheinbein is both president and manager of the Sooner State company.

•

West River Cooperative Telephone Co., Inc., Bison, S. D.; $679,000.

These funds will aid in improving and expanding telephone service. The new borrower's 256 existing subscribers will receive improved service and initial service will be extended to 374 subscribers. The company now furnishes both dial and magneto service through its central office in Bison.

New and larger dial facilities will be installed in the present leased office space.

A portion of these loan funds will refinance the borrower's existing indebtedness incurred by partial rehabilitation of the system.

Frank Butler is president and L. J. Schultz is manager of the West River cooperative.

•

DeKalb Telephone Cooperative, Alexandria, Tenn.; $299,000.

This loan will be used to finance initial service for 507 subscribers and to install mobile dial radio telephone facilities.

REA loans to the DeKalb cooperative now total $2,479,000, which will benefit 4,338 subscribers. Six of nine proposed exchanges are now furnishing dial service to over 1,700 subscribers.

W. V. Odum is president and Edward Hildreth is manager of the DeKalb cooperative.

Rex Brown Named Minnesota Company Operations Head

Announcement of the employment of Rex Brown as operations manager of the Pineland Telephone Co., McGregor, Minn., was made on Dec. 2 by O. L. Johnson, Pineland's president.

Mr. Brown was formerly general manager of the Delta County Telephone Co., Paonia, Colo.

He has had telephone communications experience with both Bell System and Independent companies. More recently, he was employed as an engineer for Communication Consultants, of Fargo, N. D.

AT&T Asks Change in Depreciation Tax Code

The U. S. Treasury Department recently issued a questionnaire to business concerns entitled, "Survey of Depreciation Practices." Among the public service companies receiving the questionnaire was the American Telephone & Telegraph Co.

One of the treasury department's questions asked the recipients for their views as to the basic principles which should be considered in establishing depreciation deduction for federal income tax purposes.

In its reply to this question, which recently was made public, the AT&T recommended that the present tax law be changed to allow for the "true economic cost" of the consumption of property (depreciation) to recognize changes in the purchasing power of the dollar after an item of property is acquired.

In making this recommendation,

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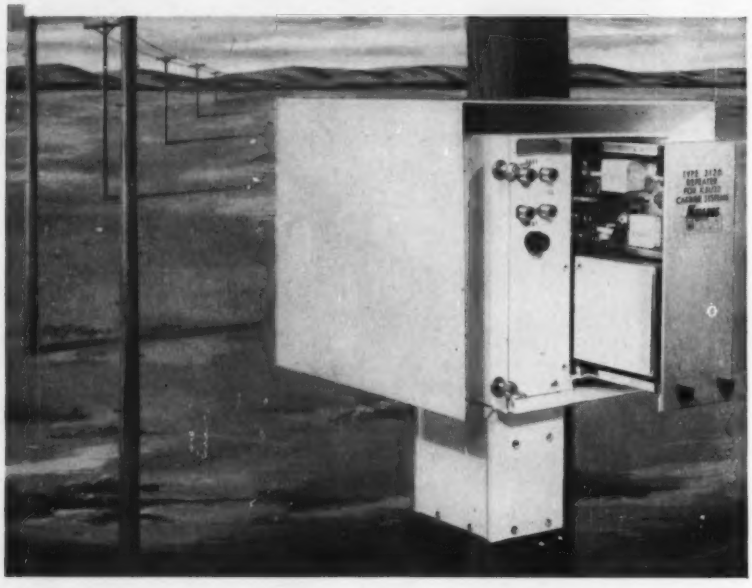

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Communications Division of International Telephone and Telegraph Corporation.

See pages 10-11 for list of Kellogg offices

AT&T stated that the law should require that depreciation allowances for tax purposes be conditioned upon the use by the taxpayer of the same basic method in determining depreciation in his accounts.

The present law, the AT&T said, does not allow for "true economic cost" by recognizing the changes in the value of the dollar; therefore, the effect of the law is to erode, in terms of real dollars, the capital employed in the business.

AT&T stated that the need for the change in the law is particularly acute for companies, such as telephone companies, which employ relatively large amounts of capital invested in long-lived plant in relation to revenues, and whose depreciation expense, therefore, is a major item in the cost of doing business.

The full text of AT&T's answer to this particular question follows:

"An income tax operates fairly only if the tax is imposed on the amount of income remaining after deduction of all expenses of operation of the business. One expense is depreciation—the provision to cover the consumption of equipment and other property used in the production of goods or services.

"However, the present tax law does not allow for the true economic cost of this consumption of property, since it does not recognize changes in the purchasing power of the dollar after an item of property is acquired.

"Accordingly, in a period of inflation, the effect of the present law is to erode, in terms of real dollars, the capital employed in the business.

"We urge that this erosion should be prevented by a change in the tax law to permit depreciation allowances to be determined by taking into consideration changes in the value of the dollar.

"The need for revision of the code along these lines is particularly acute from the standpoint of companies, such as telephone companies, which employ relatively large amounts of capital invested in long-lived plant in relation to revenues and whose depreciation expense is, therefore, a major item in the cost of doing business.

"Such companies bear an unfair portion of the tax burden as long as the tax law does not permit depreciation allowances to be expressed in current dollars, and companies which employ relatively small amounts of capital in relation to revenues are favored. This discrimination would be eliminated under the proposed change.

"In view of the continuous decrease in the purchasing power of the dollar in the postwar period, this matter has been of great concern to the Bell System companies for a number of years. On July 22, 1953, Russell E. Driver, then vice president of Michigan Bell Telephone Co., in an appearance before the House Ways and Means Committee, recommended that the tax law be changed to permit price-level depreciation.

"Workable procedures for computing depreciation allowances on the proposed

basis were described by Bell System representatives at a meeting with the Joint Committee of Internal Revenue Taxation on Nov. 17, 1953.

"These procedures would convert the depreciation base to equivalent current dollars, using a generally accepted index of purchasing power. Normal depreciation rates as presently determined would then be applied to this depreciation base.

"With inflation continuing, the situation is even more acute today than it was in 1953. Accordingly, we again urge that the tax law be changed to remedy this unfair situation.

"The tax law should permit price-level depreciation for tax purposes, and should require that depreciation allowances for tax purposes be conditioned upon the use by the taxpayer of the same basic method in determining depreciation in his accounts.

"At present, generally accepted accounting principles require that the accounts show depreciation on an historical cost basis, and we believe that the present tax law is a major obstacle preventing accounting opinion from recognizing price-level depreciation as an acceptable alternative.

"The recognition of price-level depreciation for tax purposes would, in our opinion, go a long way toward solving accounting problems as well as many other troublesome problems growing out of inflation which face business generally and regulated companies in particular."

T.O.P. TOPICS

Continued from page 28

The Federal Tax is entered on the coin telephone ticket, for the amount actually collected at the coin telephone. This may result in a slight discrepancy at times, since the charge is computed on the coin box table. However, since the call originated at a coin box and the initial deposit required the coin box tax, it must be handled to conclusion in the same manner.

If you receive a collect call to a paystation, pass the ticket details to the "Universal Operator" at the TTC (Terminating Toll Center). Enter, or encircle, "col." on the ticket, enter "psd to (TTC opr) (time)" in the space for reports and "T" at the top of the ticket.

If a "wh ok col" report is received, enter, or encircle, "yes" in the "Accepted" space, and "timed by (TTC)" in the space for reports. Stamp the time of day on back of the ticket when conversation starts and *cancel* the ticket.

If a distant toll center passes you a collect call to a paystation in your office or one of your tributary offices, record the call on an "IN" ticket, enter "rec'd (time)" in the space for reports and proceed generally as on an "OUT" call.

The methods for handling collect calls *to* paystations are being revised to conform to other new practices. These

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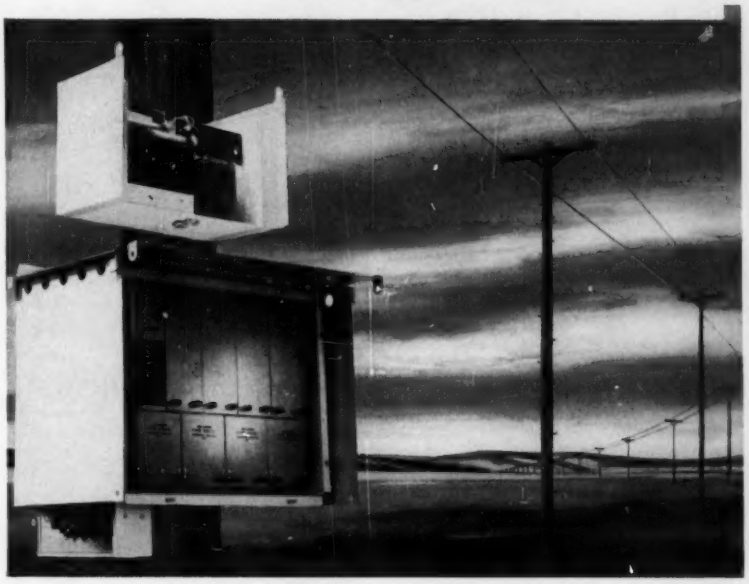

☑ *Built-In Stand-By Power* as standard equipment! Sufficient to operate 4 channels for 12 hours if commercial power fails.

☑ *Built-In Compandors!* Reduce line noise and cross-talk on open wire line so that circuits meet transmission standards.

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Best of all, the low cost of the complete systems, "no extras," will enable you to prove it even on short distances.

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DON'T FORGET, only one relay is required for each terminal of Kellogg's K-32 Trunk Line Carrier.

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new practices have to do with some more "streamlining" activities. All unnecessary operations are being eliminated as fast as newer, more practical methods are devised. Another change only means another step to better service in the future.

(To Be Continued)

General of Ohio Moves Accounting to New Office

The General Telephone Co. of Ohio recently moved its general accounting department into a newly remodeled office in Marion. The department has 9,500 square feet of floor space and was engineered for modern office practice.

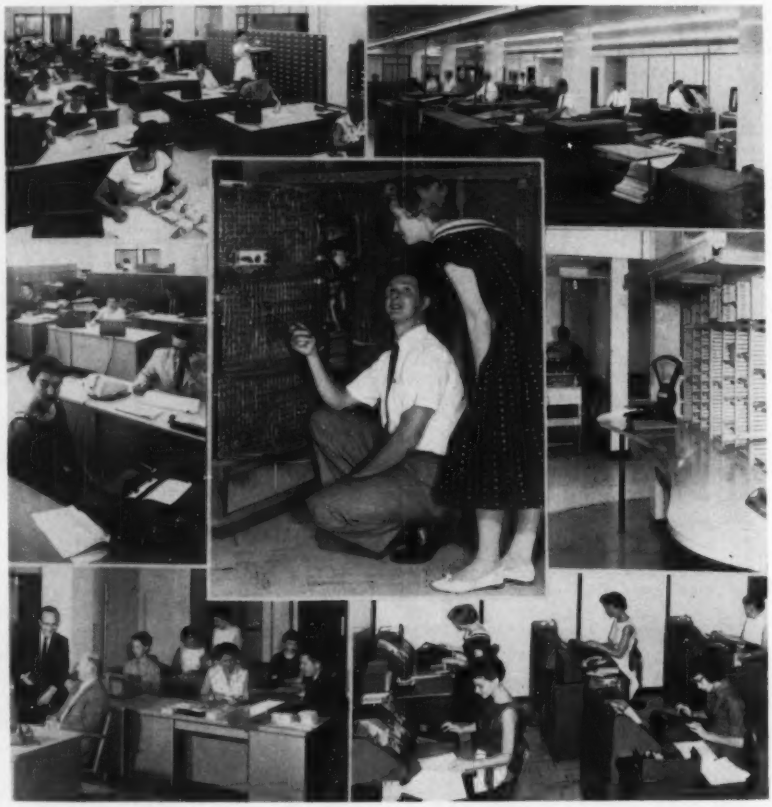
The accounting department, which consists of three sections — revenue, business machine, and general—handles 1.2 million toll tickets each month representing long distance calls made by subscribers in all the company's exchange areas.

Also handled by the department are regular telephone bills, company spending, taxes, employes' pay, etc.

A business machine section processes bills, checks and accounts. This section is Marion's largest user of International Business Machine Corp. equipment.

In 1957, the company devised a new system of billing subscribers via a machine method. Since then, at one time or another, the accounts wind up on a punched card.

Herbert J. Vrooman, controller, is head of these operations, while Frank B. Summerson is in charge of revenue accounting and C. Martin Gould of business machines.



Almost all the operations of General Telephone Co. of Ohio's general accounting department, which recently moved into a new office, are shown in this photo. UPPER LEFT—Clerks of General's revenue accounting section handle subscriber accounts. UPPER RIGHT—IBM machines process telephone bills, employe payrolls, and all other computing for General's accounting section. Two full-time IBM men handle maintenance. CENTER LEFT—Clerks and officials in the general accounting section work over employe payrolls, company taxes and other accounting functions. CENTER (Cover Photo)—This electronic computer handles 100 punched cards a minute. CENTER RIGHT—The company mail room, also located in the new offices, is staffed by four men. The streamlined sorting table was designed for efficiency. LOWER LEFT—Members of revenue accounting are shown occupied with daily business. Frank Summerson, section head, is standing at the left. LOWER RIGHT—Keypunch operators punch out cards prior to processing by business machines.

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WHEATSTONE BRIDGE MEASUREMENTS

Continued from page 40

causes. A simple loop resistance measurement through the cross itself does not always afford a very reliable means for determining the distance to the fault.

For this reason a Varley measurement is made to locate the fault. Unless there is considerable leakage in the line circuits, the accuracy of the Varley measurement will not be affected by the resistance of the cross itself. The testing procedure is as follows:

(1) Line wires 1 and 2 are looped together at the distant end.
(2) Line wires 3 and 4 are opened at the distant end.
(3) Line wire 3, which is crossed with the line 2, is connected to ground at the testing point, as shown in *Fig. 2.*
(4) A loop resistance measurement of wires 1 and 2 is made.
(5) The Varley measurement is then made in the manner as heretofore described for locating a ground, which, in this case, is equivalent to locating the cross of fault "F" in *Fig. 2.*

The distance to the fault is calculated by means of the formula:

$$D = \frac{L - V \div 2}{H}$$ where:

D = distance to the fault in miles.
L = loop resistance in ohms of line wires 1 and 2.
V = Varley measurement in ohms.
H = one-half of known resistance per loop mile of the line wire.

For the purpose of counterbalancing the effect of certain electrical characteristics detrimental to satisfactory conversation over long cable circuits, the lines are "loaded." This is accomplished by the use of loading coils, spaced at regular intervals along the lead. These coils consist of a winding of insulated copper wire having a very low resistance wound upon a closed circular core of magnetic metal.

The loading coil winding is divided into two equal parts, one of which is connected in series with one wire, and the other in series with the second wire of the pair.

In order to determine the location of a fault on a loaded line circuit, it is necessary to take into consideration the resistance of the loading coils. The sum of the resistance of all the loading coil windings forming a part of the line circuit being tested, must be subtracted from the Wheatstone bridge measurements. The remainder will be the actual resistance of the circuit, and the location of the fault may then be determined in the manner heretofore given for non-loaded line circuits.

(To Be Continued)

LOCATING TROUBLE IN UNDERGROUND CABLE

Continued from page 26

However, where the cable splices are considerably below the street level, a good wire laid on the ground and made equal in length to the faulty cable conductor may not reach the cable conductor ends in the manholes.

That, again, is no problem where wire of the same material and gauge as the defective cable conductor is available, since the faulty conductor may be pieced out in both manholes so that the good and bad wires are of exactly the same length and the test performed as outlined above.

However, where piecing out wire of the same material and gauge is not available and an extension lead of a different material or gauge has to be used, then the test procedure is modified as follows:

(1) Referring to *Fig. 2(a)*, an insulated good wire, CD, is stretched on the ground between manholes A and B paralleling the cable. Make wire CD exactly the same length as cable conductor AB including the cable ends racked in the manhole and the length of the cable conductors in the splices.

(2) Pull the good wire CD, *Fig. 2(b)*, into one of the two manholes, such as manhole A, and connect it to the faulty conductor. Then, by means of an extension lead, connect end of good wire D to the end of the bad wire in manhole B. (This may consist of an additional length of the wire used for the good wire in which case point D should be marked on the wire.)

(3) See *Fig. 2(c)* (manholes and ground line omitted for clarity). Connect a 4.5 volt battery from point D to point B. Connect one end of a galvanometer lead to point A and equip the end of the other galvanometer lead with a probe. By means of the probe, make galvanometer deflection tests along the extension lead DB until point is located where zero deflection is obtained on the galvanometer, point E. Remove probe and make solid the connection of the galvanometer wire to the extension lead at point E.

(4) Referring to *Fig. 2(d)*, disconnect battery from points DB. Ground one end of the battery lead and equip the other end with a probe. Move probe

along good wire until zero deflection is obtained. Mark that point on the good wire by means of friction tape. This point is designated in the diagram as point F.

(5) Disconnect good wire CD, *Fig. 2(e)*, and stretch it on the ground between manholes A and B as in *Fig. 2(a)*. The taped point on the good wire, point F, marks the location of the cable fault.

UTILITY PR PRACTICES

Continued from page 21

anybody, until he gets there and sees what has to be done. He is thinking of the case he has to defend in court.

Now that may be very good advice to give somebody in jail or who has had an automobile accident. But it would be the very worst kind of advice to give on a public utility controversy involving public opinion. Take a contested rate case, for example, which—as it has often been said—must be tried twice, once before the regulatory commission and once before the bar of public opinion. Well, public opinion just will not stand still long enough until the lawyer gets around and tests every statement for possible complications. When public charges have been made against a company, refusal to be frank or make a prompt explanation invites distrust and suspicion, no matter how worthy the motives of the one who gave the counsel of caution.

Let me hasten to add that I am not suggesting that the operations of the public relations officer and company counsel will necessarily be in conflict. On the contrary, a good top executive will see that they do *not* conflict, and that they get together and coordinate, as they usually do when they can operate on nearly equal levels. It is only when you make the public relations man clear everything with everybody else before he sends anything out, that what he does send out is eventually of little interest to anybody — especially the newspapers which have little taste for warmed-over handouts without flavor or originality.

I have already mentioned the other side of this same picture in saying that public relations is everybody's job. This is my fourth point. In centralizing the responsibility of public relations in a single officer, there is some danger of going too far in the other direction. I refer to the danger of fragmentation. This could happen where management attempts to delegate all the authority for maintaining good public relations to a single officer, giving everybody else the impression that they can forget about it. Nobody is that much of an expert in the field of public relations as

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to make it one man's job or a one office job. It is everybody's job, and the officer in charge is the coordinator, not the substitute, for individual responsibility of everybody in the organization from the unskilled laborer right up to the top executive.

Graft a Better PR Outlook

The task to be done is to get each department to think of its *own* work in terms of its public relations aspect. In other words, people who have worked with complaints for years have far more practical experience with how they should be handled, including the public relations aspects, than any "specialist," however well-trained in public relations approach. The same may be said of those in charge of meter reading, billing, installation, etc.

The problem here is to graft a better public relations outlook on the existing set-up, where it may be lacking or deficient, rather than interpose some new set-up just because it has a "public relations" label on it. The intervention of such a new set-up might even result in a slackening of the existing key personnel's interest, on the theory that the public relations part of the responsibility has now been shifted elsewhere.

My fifth and last point brings us back full circle to the objective of all public relations work. We must make a distinction between the public relations program and the end which it is to serve. The end, the objective, is to make friends for the company, to build up public confidence in its integrity. The program, as such, is only a means to this end. It should be regarded as a tool. Now you know all tools sometimes get dull. They have to be sharpened and kept up. Yes, sometimes they even have to be replaced.

Take that very phrase "public relations." We hear it bandied abroad so much these days as being virtually synonymous with propaganda and even false labeling that there is a danger that the two words are getting a bit shopworn and may even become a casualty. If that happens we may have to drop them in favor of something else that does not have an unfair connotation. I hope not. But if that time did come, I say we should not flinch. We should not hesitate to switch to something else, because no tool is more important than the end which it is supposed to serve.

So it is important that our tools be kept in working order. And the test of this, I think, is whether it does an honest job. I do not like to use that overworked word "communications" or that other overworked word "image." But we should ask ourselves does the program, whatever we may call it, convey a true, fair, and honest message to the public? One that you believe in yourself. This is most important of all because if you do not believe your own message, how can you expect others, the general public, to believe it? In this respect, I think you are most fortunate.

One of the most soul-satisfying things about public relations activity in the utility business is that you *can* believe in it, because it *is* right, it *is* fair. You can tell the story of public service which brings more benefits to more people, in terms of a higher standard of living, than all the corresponding state-owned utility services in all the rest of the world put together. I do not have to relate the greater number of telephones, the greater usage of gas and electricity per capita, the greater mileage of transportation, etc., which we have here in the United States compared with the rest of the world. You know all about that.

The point I make is that here is something you can believe in yourself —something you know in your heart is right. *Think what a wonderful thing it is just to be able to say that!* Think of the thousands of paid propagandists for the enslaved masses of communistic nations who can never say that! Think of the mental agony of those men who must tell lies upon lies, day after day—for what—for the enslavement of more masses!

No, you cannot improve on this truth. And no public relations program worthy of the name would ever try it. Techniques may come and gimmicks may go; but the simple, warm, and satisfying task of making and keeping friends is a reward in itself which will surely be yours as you cultivate the good seed and reap the good fruit of good public relations!

Book Review

"GAS TUBES," edited by A. Schure; 80 pages; $1.50.

The use of ionized gas in electronic tubes has made possible the manufacture of voltage regulators, rectifiers, thyratron controls and even switching tubes for telephone circuits.

Yet, many technicians are not fully familiar with how these devices work. This book is one of an "electronic technology series" which will fill out this gap in your education. Because it is confined to the single subject, the book is able to give a complete, straight-to-the-point description of these devices. You can order it from TELEPHONY.

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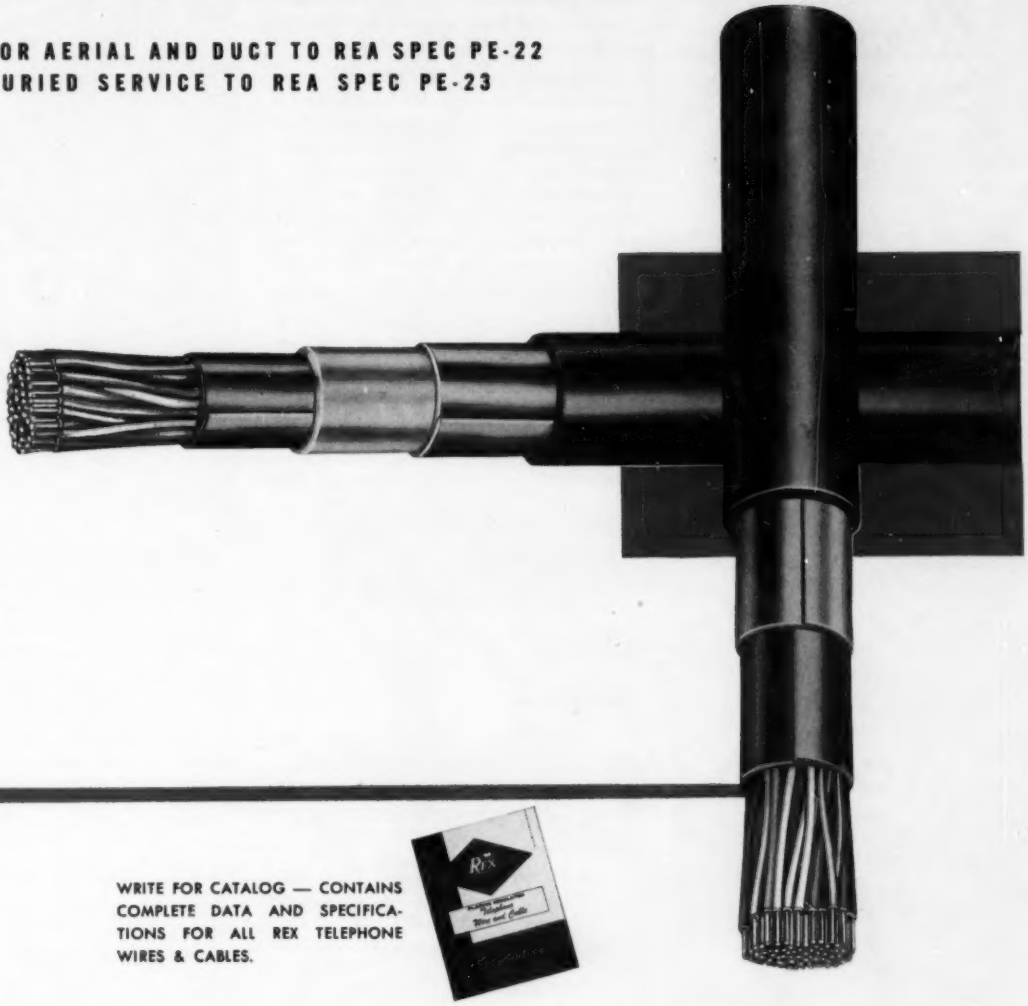


WRITE FOR CATALOG — CONTAINS COMPLETE DATA AND SPECIFICATIONS FOR ALL REX TELEPHONE WIRES & CABLES.

THE REX CORPORATION

100 HAYWARD ROAD, WEST ACTON, MASS.

Crapo

HTL-195

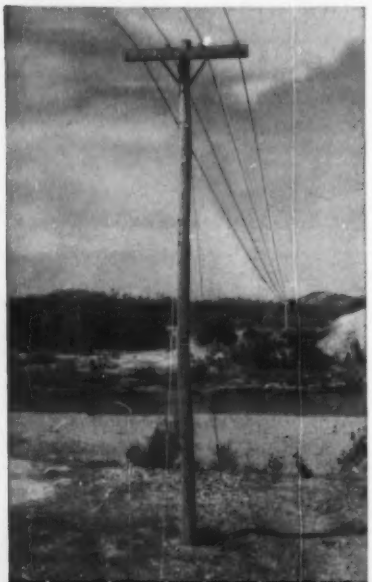
EXTRA HIGH-TENSILE TELEPHONE LINE WIRE

for low-cost Rural Lines

• Spans up to 600 feet in Heavy Loading, 650 feet in Medium Loading and 700 feet in Light Loading districts are possible where Crapo HTL-195 is employed. This extra long span construction results in marked savings in costs per mile of line. Pole structures can be reduced to a minimum. Fewer pole structures mean substantial savings both in materials and man-hours of labor. There is less hauling to be done, fewer holes to dig, less material to be handled, installed and connected.

Improved electrical qualities make practical typical subscriber loops of 14 to 15 miles with normal voltages and equipment. Also can be used for subscriber carrier.

Write for Engineering Manual No.TM-59



INDIANA

STEEL & WIRE CO., INC.
MUNCIE, INDIANA

News on New Products

SPACE-SAVING BATTERIES — The industrial division of Gould-National Batteries, Inc., announces that it has introduced a new line of light-weight, space-saving stationary batteries for telephone, switchgear, alarm system, control, signaling, emergency light, and other applications where batteries are used as standby emergency power. Available in 50 to 1140 ampere-hour capacities, the new line of calcium batteries is designed for full float service.

A Plastrite jar said to be lighter in weight than conventional containers, is claimed to save 30 to 40 per cent floor space, permit increased battery room capacity and reduce storage rack requirements. Easier to handle because of reduced overall weight, the high impact resistant plastic container will not bulge or warp under heat, Gould reports.

The new calcium battery, according to the manufacturer, features several construction improvements that incorporate the advantages of improved electrical characteristics with long life and dependable performance under rugged service. A new leak-proof post seal utilizes a soft rubber O-Ring in compression to seal the post against any possible seepage: the acid-proof seal is reported to eliminate corrosion and wet covers.

Breakage of the plastic cover due to the weight of the battery elements is eliminated, it is claimed, with an integral molded ledge on each end of the jars that supports all the element weight. The elements are prevented from shifting, even though a cell may be accidentally inverted, since the U-shaped plastic support is bonded to the jar edge.

New terminal posts have a high ratio of contact of posts to the connector assuring, Gould says, full current-carrying capacity with maximum voltage from

cell-to-cell at all times. All posts have bolt holes in both directions that permit assembling cells end-to-end or side-to-side. Request NP1236.

•

HYDRAULIC POWER UNIT—A unit designed to power all the hydraulic equipment needed on a utility construction body is an integral part of the new Uni-Power Body manufactured by Holan Corp. Holan builds the body, power plant and all hydraulic equipment as

TELEPHONY PUBLISHING CORP.
608 S. Dearborn St.
Chicago 5, Ill.

Please have the manufacturer send me without obligation the literature indicated by the following numbers:

NP1236_____; NP1237_____; NP1238_____; NP1239_____;
NP1240_____; NP1241_____; NP1242_____; NP1243_____.

Name.....

Company.....

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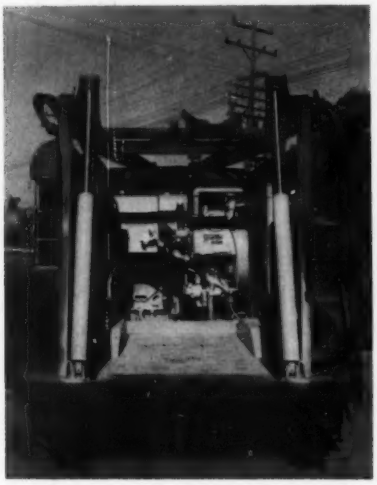
Town and State.....

12/12/59

a unit. The complete unit is then bolted to the chassis.

The "power package" consists of a 56 h.p. Wisconsin 4-cylinder air-cooled engine, a Braden Model CL hydraulic winch and a tandem hydraulic pump with 50-gallon oil reservoir. This unit powers the hydraulic derrick, winch, digger and supporting jacks.

The compact unit, located just behind the crew compartment in the bed of the body, can be lifted out *as a unit, or by component parts*, for repair or replacement without removing the body. All hydraulic piping is done under the floor of the body and clear of the chassis.



This new method of body construction offers many customer advantages, Holan states. When the chassis is at the Holan plant, a Uni-Power Body can be mounted in a matter of hours — not weeks, it is reported. Or the new bodies can be delivered in trailer loads to the customer's garage, completely painted and ready for rapid mounting to chassis. A unit can be carried as a "spare" and placed on a chassis in two or three hours, thus eliminating long tie-ups of crews.

In addition to speedy body mounting or change-over, the power unit is said to offer many other advantages. For example, says the company, gasoline used in the stationary power plant is free of road tax; engine idling—with resulting wear and tear on the truck engine —is eliminated; and down time for maintenance is drastically reduced because truck and body are independent units and are serviced as such. Request NP1237.

•

PLASTIC CABLE GUIDE — A new Plastic Telephone Cable Guide has been announced by General Cable Corp.

The guide is available free of charge. Only 3-11/16 inches in diameter, it is

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U.S. PAT. 2,844,720

DATA TRANSMISSION and TELEGRAPH TERMINALS

RFL TERMINAL EQUIPMENT
is being used with satisfaction by Railroads, Pipe Lines, Telephone Companies, Toll Highways, and Public Utilities throughout the world.

Radio Frequency Laboratories offers a complete line of models which are available with various features included to insure lowest possible cost to the customer for a given installation and application. Therefore, he is never penalized cost-wise for equipment features not desired or required.

The equipments are extremely versatile and, therefore, may be utilized in practically all data transmission and telegraph applications. A number of accessory equipments are available such as electronic and relay repeaters, party line keyers, DC hybrids, etc., to insure system compatibility.

MODEL 995

Low cost frequency shift telegraph terminal including all essential controls, power supplies and utilizes printed circuit modules.

The Model 995 is an all electronic terminal designed for data transmission and telegraph applications at speeds up to 100 wpm. The equipment comes complete with all necessary filters, equipment and loop power supplies and is available packaged as either a single or dual unit. Fourteen 100 wpm channels are available from 765/2975 cps.

MODEL 1601C

Data Transmission and Telegraph Terminal featuring plug-in frequency determining components, jack fields, and high speed circuitry.

The Model 1601C retains all the features of the Model 995 and offers the additional advantages of a carrier and loop jack field accessible through the front cover and plug-in frequency determining components. Channel arrangements are available to permit operation of either eighteen 100 wpm, twenty-five 75 wpm, or six 200 wpm channels between 400 and 3300 cps.

MODEL 1220

Completely transistorized Terminal temperature stabilized for long life, reliable service at reduced power requirements.

The Model 1220 retains the essential features of the Model 1601 but is a completely transistorized unit which may be operated directly from batteries with very low current drain or normal AC power facilities. The equipment is completely modular in design and accessory jack fields, power supplies, and front panels are available as required.

SEND FOR TECH. DATA

For additional information, including application data, write or phone DE 4-3100. Demonstrations available by local representatives.

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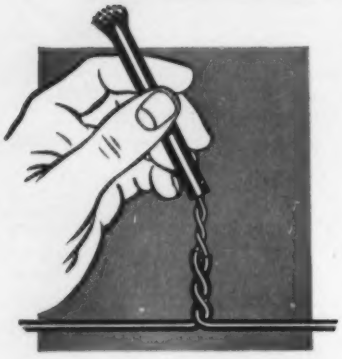
RFL Radio Frequency LABORATORIES, INC. Boonton, New Jersey, U.S.A.

Superior's "Super-Splice"® is safe and sure!



"Super-Splice" makes splices waterproof . . . from inside out!

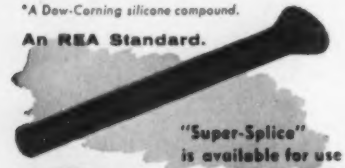
Sealed at one end, this plastic splice sleeve is filled with an insulating and waterproofing compound.*

Economical "Super-Splice," a Superior exclusive, makes the splice permanently as good as the cable . . . yet it can be re-entered easily. The compound never hardens or oozes out no matter what the temperature.

Prevent leakage currents and breakdowns in the presence of moisture...good for 25,000 v.d.c. Order "Super-Splice" NOW!

*A Dow-Corning silicone compound.

An REA Standard.



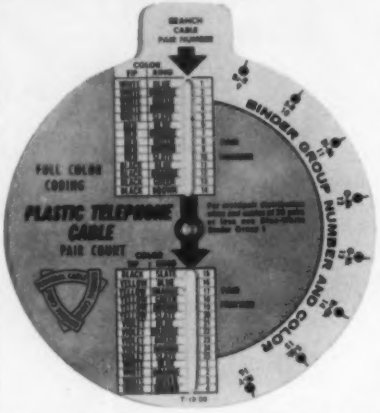
"Super-Splice" is available for use with straight, butt or bridge splices.

For further information on economical "SUPER-SPLICE", write

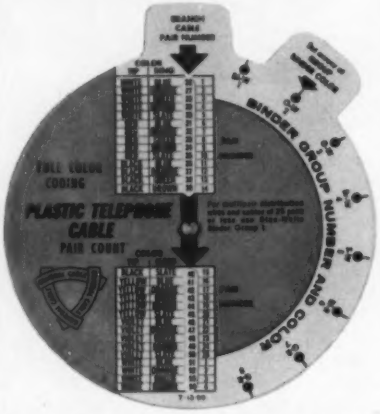
SUPERIOR CABLE

SUPERIOR CABLE CORPORATION
Hickory, North Carolina

shaped to fit comfortably in a shirt pocket and is described as providing full information on Alpeth, DS-Alpeth, Supertel-1958A, multipair distribution wiring and any other paired construction employing the standard blue-orange-green-brown-slate color code.



Shows binder groups 9 through 16 covering pairs 201 through 400.



View of calculator set for orange-white binder group showing color code of pairs 26 through 50. This is said to enable the user to determine at a glance not only the pair within the group but the pair within the cable as well.

The guide, General Cable says, enables the user to determine the relationship of any pair to the entire cable, and to pick out the pair number (1 to 400), binder group (1 through 16), and to see at a glance the color code for the pair and the color code of the binder within which the pair lies. Request NP1238.

•

NEW CONSTRUCTION BODY—The York-Hoover Corp. announces a new series of line construction bodies—its "Bobcat" series, designed for handling heavy loads.

Described as offering more stability and strength, the rear overhang of the truck body has been reduced to get the pivot point of the derrick closer to the rear wheels of the truck. Thus, the center line of the load is closer to the rear. Actual distance from center line of the rear axle to the rear of the body is 26 inches.

Because of the short distance to the rear, the truck has a tail shelf on the back of the body, which covers the rear spring hanger of the chassis. The company explains that this feature enables the handling of much larger poles without using derrick support jacks.

The "Bobcat" series is of corrosion-resistant galvannealed steel construction.

The body bases are heavy duty type, designed for maximum strength and rigidity, York-Hoover reports. Rear cross members are made of 6-inch-high structural steel channels. The floor is fabricated from 3/16-inch treadplate of 5/16-inch overall thickness. Front cross members are of 12 gauge steel spaced for adequate support to floor and side boxes.

The side boxes on these bodies are fabricated of 18 gauge sheet steel with 16 gauge partitions. Interiors are fitted into drawers, tool holders and shelves. Door post sections are double thickness.

Doors are double pan type of 22 gauge steel, and are light weight, described as requiring a minimum of maintenance.

An optional feature is a 36-inch-by-78-inch crew compartment, also of 16 gauge steel. The left side panel and right side door have crank regulated drop windows; and the rear panel has a double sliding window, which serves both for ventilation and as an emergency exit. This window is protected from the winch line with a hinged screen. Request NP1239.

•

CARRIER SYSTEM TERMINAL — Lenkurt Electric Co. reports it has redesigned and improved its 45C carrier telephone system which now provides up to 32 toll-quality voice or signaling channels for radio transmission, as well as 16 toll channels for open-wire application.

The compact system is arranged, the company says, in four groups of four channels each, incorporating an improved model of the 45CB terminals released previously and adding CA, CC and CD terminals and fully-transistorized wire-line repeaters.

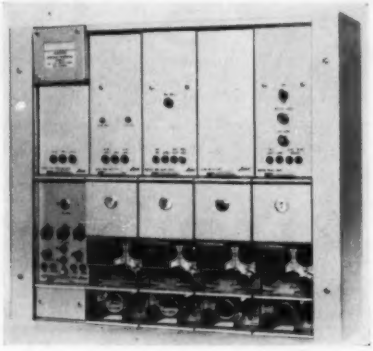
An added feature in the new system is transmission frequency control which is said to permit end-to-end frequency control when the 45C is incorporated in 45-class system networks.

Designed primarily for short to medium-haul open-wire routes, the 45C system, Lenkurt states, coordinates with

Western Electric Type O carrier and can be inter-connected with other 45-class carrier systems.

The system may be installed with a single group initially and then expanded group by group as more channels are needed.

The top four-channel groups — 45CB, CC and CD—can be applied to open-wire lines above existing low-frequency carrier systems such as the Lenkurt Type 33A system, according to the company. For radio multiplexing, four-wire application provides double the number of channels derived from each group.



Each four-channel terminal occupies 17 inches of vertical rack space. Plug-in design is claimed to provide quick unit replacement and ease of maintenance. Plug-in compandors provided for each channel may be omitted for telegraph or data transmission.

Transistor amplifiers and oscillators in common equipment and repeaters result in low power consumption and high reliability. All standard signaling options are available, the company says, using an optional out-of-band frequency-shift signaling circuit in each voice channel.

Flat-gain system regulation, and individual regulators built into each channel unit, keep channel drop levels to about ± 1 db over a wide range of weather conditions, according to reports. The system uses standard single-sideband suppressed-carrier transmission. Sixteen channels occupy the frequency band of 2 to 156 kc. Request NP1240.

•

CABLE PRESSURE GUARD — The United Electric Controls Co. is introducing a smaller, more compact pressure guard, which warns of leaks or breaks in the line in pressurized telephone cable systems. Originally developed for the Bell System, pressure guards are now widely used throughout the country as an aid in reducing cable maintenance costs and improving customer service.

The new, small-size Type J31 pres-

you expect more from a specialist ...you get more from

COMPARE Alphaduct with any other telephone drop wire! None can offer you a better balance of the physical and electrical properties necessary for dependable, long-life communication service.

EXHAUSTIVE TESTING:
TANK TESTS—every coil of Alphaduct is submerged in water for voltage breakdown and insulation resistance tests.
COMPRESSION TESTS—Alphaduct drop wire is manufactured to withstand exacting crush resistance tests.
P-CLAMP TESTS—insures superior bonding of rubber to conductor and jacket to insulation...simulates field conditions.

EXCLUSIVE DATING FEATURE— every length of Alphaduct carries manufacturer's name, catalog number and date of manufacture...provides permanent service record of installation...proves Alphaduct's long-lasting durability.

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AVAILABLE IN THREE CONSTRUCTIONS (in both reinforced and non-reinforced) Twisted Pair, Parallel Type, and Dumbbell Type.

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When you buy Alphaduct Drop Wire or any one of Alphaduct's complete line of telephone wires—you buy the know-how of the only real independent specialists in the insulated telephone wire field.

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WIRE AND CABLE CO.
NEW BRUNSWICK, N. J.
CHarter 9-8090

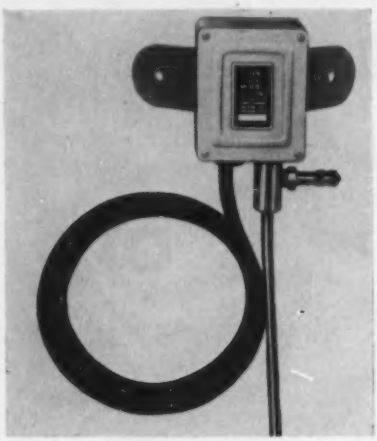
Regional Distributors
Buckeye Telephone & Supply Co.
Columbus, Ohio

The Lindsay Telephone Supply Co.
Cleveland, Ohio

Pankey Supply Co.
Charlottesville, Va.

sure guard was developed to achieve more versatility at lower unit cost for wider application, the company states. It is suitable for cable, pole or wall mounting.

Field adjustment range is 0 to 10 psi with a factory setting of 2 ± ¼ psi. The unit has a pressure response of 4 ± ½ ounce. The bellows are spring-



loaded phosphor-bronze for sensitive and stable response to pressure change, United Electric Controls Co. says. Proof pressure is 30 psi.

The electric rating is 0.01 amp 100 V dc. A 270,000 ohm, 1-watt, carbon composition load resistor is series-connected, with a snap action switch having palladium contacts.

The enclosure of the guard is die cast aluminum, triple-coat gray enamel. The cover is attached with stainless steel screws and has a type GRS neoprene gasket. This waterproof case has three 1/16-inch-diameter breather holes for condensate drainage.

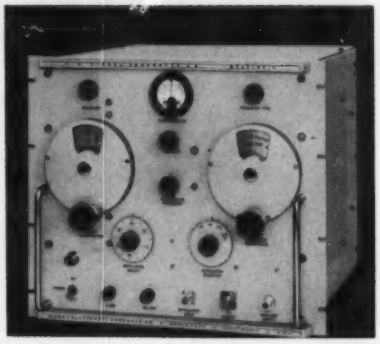
The Type J31-5333 cable mounted pressure guard has 6 feet of Type SJO #18 stranded 2.0 conductor drop wire and a ⅛ NPT pressure connection. The guard is supplied with a pole or wall mounting bracket and 6 feet of copper tubing. Request NP1241.

•

FM SIGNAL GENERATOR—A new FM signal generator covering the frequency range of 1300 to 2500 mc in one band is now available from Sierra Electronic Corp., a division of Philco Corp.

The signal generator, Model 201B, provides FM characteristics, according to Sierra, and is specifically designed for telemetry and data transmission applications in the 1.3 to 2.5 kmc range. Featuring a 1 per cent deviation linearity, the instrument can be frequency modulated by applications of external signals having modulation bandwidths up to 500 kc.

A nominal deviation of 2 mc peak-to-peak is reported produced by external modulation signals having an amplitude of 1.0 volts peak-to-peak. Model



201B also provides CW characteristics by virtue of the low value of residual FM.

The instrument's RF output is described as continuously variable from 0 dbm to —110 by means of a precision-calibrated piston attenuator. Model 201B also provides direct reading, single dial tuning and high stability.

Sierra has also announced the availability of a wide deviation FM signal generator, Model 202B. This instrument, covering the frequency range 2200 to 2300 mc, is claimed to also provide FM characteristics with extremely large deviation for use in wide band applications. Its modulation amplifier response is flat within the limits of 0 db to —6 db from 10 cps to 10 mc. Request NP1242.

•

SINGLE ARM DERRICK—A single ("radial") arm, hydraulic derrick which is claimed to offer greater working versatility, is being produced by Tel-E-Lect Products, Inc.

Specified the "CD Derrick," the new Tel-E-Lect unit, is designed, the manufacturer says, to mount to standard and existing utility bodies. The CD is furnished as a complete package for installation in the user's shop. All hydraulic fittings and connections are factory pre-fabricated, according to the company, thus eliminating complicated installation procedures.

A unique Tel-E-Lect feature has the derrick mounted to the left rear of the truck. Doing so is reported to produce increased stability of the entire unit when the derrick is working; better balance when derrick is in use or when the truck is in travel. Increased safety and versatility are also said to result from the leftside installation.

Tel-E-Lect Vice President Ray Kennedy stated, "Our research and testing

ENGINEERS

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String your lines with USS Tiger Brand Amertel 195.

When you string your rural telephone lines with Tiger Brand Amertel 195—the bonus telephone wire that is engineered for spans up to 700 feet—you cut down on the number of poles needed. With fewer poles, your installation cost per mile of line will drop substantially.

There are other ways this superior quality telephone wire can improve your service, reduce your maintenance and installation costs:

- Amertel 195 stands up under severe weather conditions, reducing service interruptions to a minimum.
- Telephone lines can easily be strung over rivers, gullies or other areas requiring spans of unusual length.
- The low resistivity of this fine wire results in improved voice transmission even at relatively high frequencies.

For more information on Tiger Brand Amertel 195, send for our free booklet. Write to American Steel & Wire, Dept. 9187, Rockefeller Bldg., Cleveland 13, Ohio.

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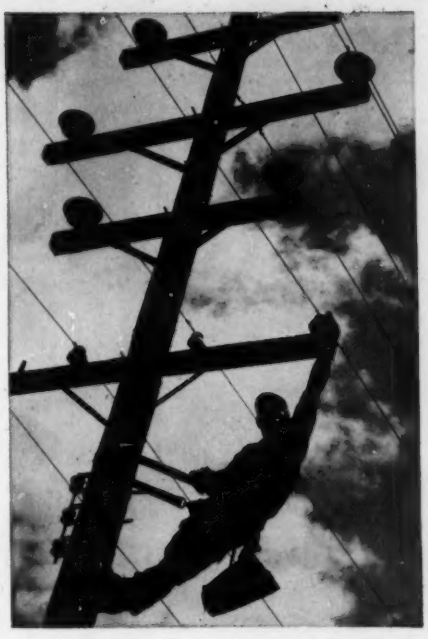

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Here is a much-needed book on sales training for use by managers, department heads, superintendents, trainers, schools and libraries.

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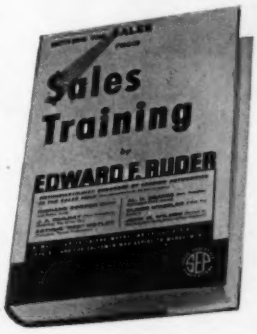

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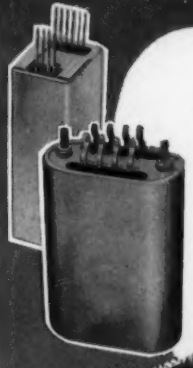

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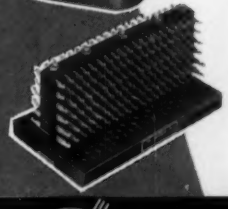
Repeat, retard and loading coils . . . and telephone filters, of all types—available either as stock items or to meet special requirements.



Terminal blocks of all types for all purposes. We offer many items shipped from stock—as well as special requirement facilities.

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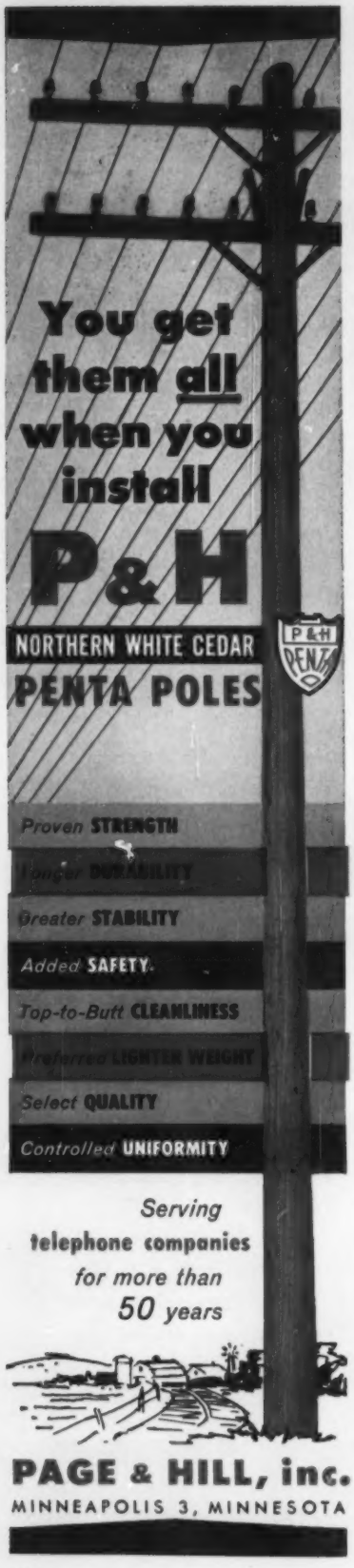
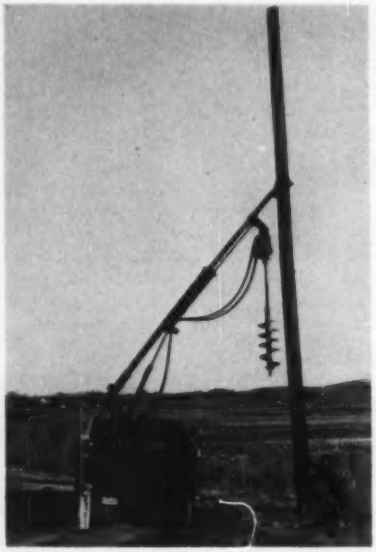


show that by mounting the derrick on the left, the truck is actually able to perform more work than if it were mounted on the right.

"Instead of an outrigger for balance, we use a hydraulic jack which drops from just behind the rear right wheel, giving a 5½-foot span from derrick to jack. With the derrick on the left, and the jack on the right, we can provide stability anywhere the truck can go. We needn't depend on a firm, flat road shoulder.

"Additionally, with the derrick under loading conditions, the balance point is well under the derrick rather than back near the mounting point. This enables the CD derrick to lift loads of up to 8000 pounds safely.



"The CD derrick can work in a wide range from front to back of the truck on the right side, and in a full arc behind the truck to past the left rear corner."

A maximum sheave height of 28 feet is provided. The CD derrick has a 4-foot hydraulically-adjustable stinger which, coupled with the 3-foot head extension is said to give the derrick a versatile working radius. The hydraulic stinger may be extended and contracted when the derrick is under load.

Tel-E-Lect's DH-800 hydraulic digger may be used with the CD derrick. Digger drive is optional. The digger is mounted to the stinger, thus the CD unit is described as being able to dig holes in an arc from directly behind the truck, around to the front, and in the 4-foot range provided by the stinger.

A working advantage of the CD derrick with adjustable stinger, the company maintains, is that no longer is it necessary to position the truck precisely for pole hole digging, pole setting or other derrick work.

"Now, you . . . drive up near the job location and let the CD derrick reach out, in or around, to get the job done!" Mr. Kennedy stated. Request NP1243.

SOUTH CAROLINA MEET

Continued from page 34

phone people must pay attention to a woman's point of view.

He said: "The telephone of the near future will be smaller, lighter, more pleasing to the eye, and yet, at the same time, more efficient than the telephones we have today."

He also described, as part of what the future holds, the Bell laboratories wave guide: "This," he stated, "is a hollow copper tube. A pair of them will transmit electrical waves which will make it possible to send through over 400,000 telephone conversations at the same time."

A prediction that a radio-relay satellite will make it possible to telephone any point in the world, and for 20 cents per call, was discussed by Mr. Barnhart, as a possibility not to be discounted in the light of the rapid pace of technological advancement in communications.

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Turning to the present, he outlined some of the USITA's projects during 1959.

In a report on USITA's Marketing Committee, Mr. Barnhart said it has been found that the surface has barely been scratched for the selling of telephone services of many kinds. The committee has advanced an organized plan aimed at the realization of maximum profits through selling.

The activities of the Toll Settlement Sub-Committee were cited to show, Mr. Barnhart said, "that the USITA is working constantly in behalf of all Independents and their financial welfare."

As for excise taxes, another national problem facing the USITA, he pointed out that:

"All out repeal will never be accomplished unless the great mass of back-home telephone users who are the voters, tell their congressmen about it. Our job as telephone folks is to educate the public so that everyone will realize that they alone will benefit from such action and that complete repeal will bring them an immediate reduction of 10 per cent off their monthly bills."

The Independent industry, through the efforts of the USITA national advertising program, is becoming known to the public, Mr. Barnhart stated.

This program, he said, "has helped provide expansion capital for our companies, promoted a better atmosphere for more adequate rates for service, helped attract capable personnel, helped build good will and public confidence, and promoted the American system of free enterprise."

Mr. Barnhart observed, too, that he urges his employes to go to the state convention, and feels that if they come home with one idea that helps the company, then the trip has been worth the time and expense.

"Personnel Relations in the Telephone Industry" were discussed by M. Ray Houston of Durham, N. C., director of personnel, General Telephone Co. of the Southeast. He pointed out that even with all of today's benefits, holidays, pensions, and coffee breaks, a company still isn't necessarily insuring a good, loyal, capable work force. Loyalty cannot be bought—it must be earned.

Mr. Houston set forth the following three reasons why man has been slow in making progress in the field of human relations:

(1) We only have to review history to find that the business of acting like a gentleman is comparatively a new idea with man. Progress with material things and scientific things forced us to group ourselves closer together and to communicate with each other. Now we are still learning how to adapt our thinking to this complex human environment.

(2) The second big reason why we have been slow in discovering the basic principles of successful human relations is that when we violate one of the laws of human behavior there is usually a delayed reaction—sometimes even years. Not so in our material world. You only have to ignore the law of gravity from a second floor window to prove this point.

(3) We have only within recent years discovered, through extensive research, just what people want in a job. For years and years we were of the opinion that an adequate salary would satisfy every employe. On the contrary, we could not have been further from the facts.

Now we believe we know what our people want, Mr. Houston went on. As more and more is discovered about employes' wants and desires, management is able to reach closer toward the objective of good human relations. Mr. Houston said that thousands of employes working in all types of industries have stated in attitude surveys and interviews just what they are seeking in a job. He summarized the findings as follows:

"One, they want a certain amount of security. They recognize a natural desire to stay alive and be alive—to breathe, eat, sleep, hear, feel, and live. This is our number one desire.

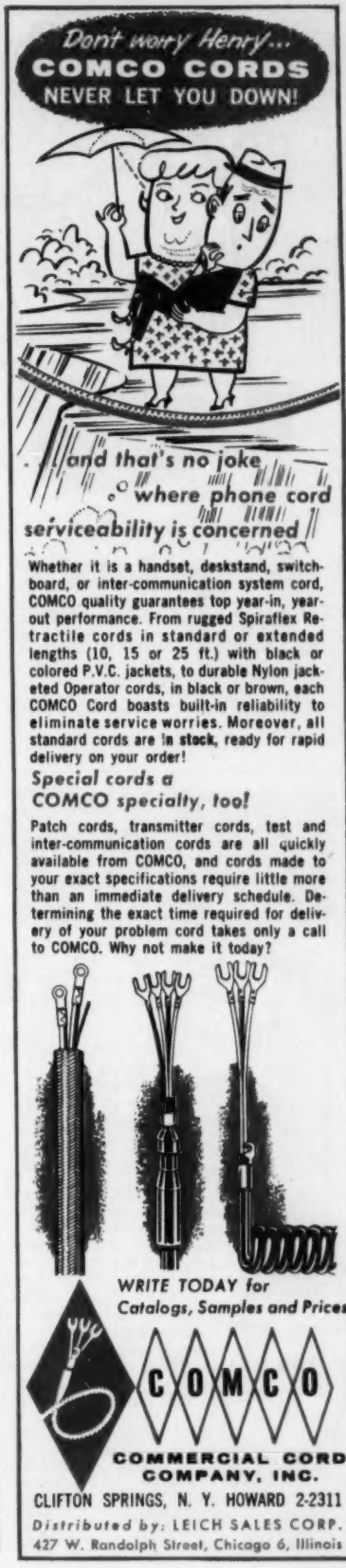
"Two, they want to feel safe from danger. We provide laws, rules, union contracts, social security, and a police force.

"Three, we need to be social. From the very beginning we have lived together as families and tribes. We join lodges, marry, have parties, even pray in groups. The feeling of brotherhood is strong within us.

"Four, we need to feel worthy and respected. We need to have other people think well of us. This is one form of recognition. This is our strongest need in America today. Look what we go through just to keep the approval of others. We decorate ourselves, carefully and often, shaving and washing, powdering and painting, combing and curling. We desire and acquire things that show our acceptance—big cars, better clothes, finer furniture. We discard them when other people don't accept them, not when they wear out. We act more "refined" in public than at home. And our worst traits we even hide from ourselves. We must have acceptance from others.

"Five, we need to do work we like. This work must provide for us personal satisfaction, a sense of belonging and worthiness."

Today, the average employe realizes that his job security and opportunity for advancement depend upon the com-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pany's success, Mr. Houston stated. He can expect to prosper only if the company prospers. He knows that good management will help him do his job better and faster. He knows that good management will work to provide him with fair treatment and fair wages.

Concluding, Mr. Houston said, "When the supervisor knows what employes want and is able to earn the respect and confidence of every one of those for whom he is responsible, then we can say we have made some progress toward achieving good human relations."

Burnett R. Maybank, lieutenant governor of South Carolina, in a talk given at the association banquet, highlighted the progress of the South in the areas of research and education. He also touched on a number of other facets of the area's economic progress.

Named to three-year terms on the board of directors were Charles Bell of Chester, E. W. Hart of Hemingway, C. B. Barksdale Jr. of Greenwood, and T. Carter Thomasson of Lancaster.

Other directors are: R. D. Coker of Simpsonville, George Thompson of Southern Pines, N. C.; R. D. Guerry of Kingstree and Raymond Sheehan of Sumter.

Also Frank S. Barnes Jr. of Rock Hill, S. S. Helmly of Moncks Corner, H. W. Askins of Chesnee, and A. O. Bolen of Swansea.

Officers are: President, Mr. Barnes; vice president, Mr. Helmly; secretary, B. B. Harder of Sumter, and treasurer, Mr. Seymour.

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" . . . progress and examples such as the dial system mergers well may eventually bring about more community service consolidations. Meanwhile, Joplin, Webb City, Carl Junction, Carterville, and Oronogo can feel a little closer by being able to say hello over short instead of long-distance lines."—*The Joplin* (Mo.) *Globe* (June 23), editorially commenting on a Southwestern Bell extended area service plan.

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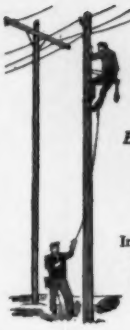

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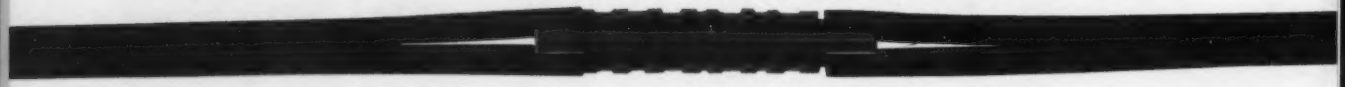

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